

A review of *Polyrhachis gravis* and *P. micans* species-groups of the subgenus *Campomyrma* Wheeler (Insecta: Hymenoptera: Formicidae: Formicinae)

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ABSTRACT

Polyrhachis gravis and *micans* species-groups of the subgenus *Campomyrma* Wheeler are reviewed. Ten species in the *gravis*-group are recognised, including two previously described, *Polyrhachis gravis* Clark and *P. pseudothrinax* Hung, and eight species are described as new: *P. bispinosa* sp. nov., *P. capillata* sp. nov., *P. captiva* sp. nov., *P. curtospinosa* sp. nov., *P. hespera* sp. nov., *P. opacita* sp. nov., *P. palmerae* sp. nov. and *P. unicornis* sp. nov. Five species are recognised in the *micans*-group, with three species previously described, *P. incerta* Kohout, *P. micans* Mayr and *P. prometheus* Santschi, and two species are described as new: *P. eureka* sp. nov. and *P. shattucki* sp. nov. A key to the species of both groups is included. All species are illustrated and their known distribution summarised. □ *Polyrhachis gravis*, *micans*, Formicidae, *Campomyrma*, Australia, systematics, new species.

The subgenus *Campomyrma* was established by Wheeler, (1911) as a replacement of the Emery's (1896) 'cohors *Polyrhachides camponotiformes*'. He designated *Polyrhachis clypeata* Mayr, 1862 (= *Polyrhachis exercita* Walker, 1859) as the type species, but did not provide a description of the subgenus. Forel (1915) elaborated on Emery's classification by subdividing several of the *Polyrhachis* subgenera established by Wheeler. Within the subgenus *Campomyrma* he included Emery's 'manipulus *clypeata*' and 'manipulus *femorata*', but excluded 'manipulus *thrinax*', which he formally established as subgenus *Myrmothrinax*. A description of *Campomyrma* was eventually provided by Emery (1925), who also subdivided the subgenus into two species-groups, with most species included in the *clypeata-femorata* group and two species from south-east Asia placed in the *halidayi*-

group. An additional, *inconspicua*-group, was listed by Andersen & Burbidge (1991), but the authors did not give any further details. Later, Andersen (2000) recognised six species groups within *Campomyrma* - *creusa*, *gravis*, *inconspicua*, *micans*, *schwiedlandi* and 'Group A', most of them pertinent to the monsoonal and arid zones of northern Australia. He provided a key for their separation and portrayed three of these groups (*gravis*, *micans* and *schwiedlandi*) as composed of 'some of the most spectacular-looking of all *Campomyrma*'. Andersen (2000) characterised the species comprising the *gravis*-group as 'hairy and conspicuously striate species (although often rather shiny), often with contrasting reddish legs. They typically have a scale-like petiolar node, with four erect, approximately equal teeth or small spines'. Two exceptions are *P. pseudothrinax* Hung, 1967

and *P. unicornis* sp. nov., described below, both featuring a *Myrmotherinx*-like petiole with a single, long, central spine. Besides *P. gravis* Clark, 1930 and *P. pseudothrinax*, the *gravis*-group presently includes 8 newly described, closely similar species differentiated mostly by the sculpturation of the mesosoma and the configuration of the petiolar spines. Most species of the group are relatively rare, with many known only from a short original series or single specimens collected during recent environmental surveys of poorly known and isolated parts of the country. Andersen (2000) characterised species of the *micans*-group as 'easily recognised by their *Myrma*-like petiole, with a central pair of long, sharp spines'. The only relatively common species of this group are *P. micans* Mayr, 1876 and *P. prometheus* Santschi, 1920, the latter also being the most widespread species of the group. As perceived here, the *micans*-group includes the two latter species, the recently described *P. incerta* Kohout, 2008 and two new species described below. The third, *schwiedlandi*-group, according to Andersen (2000), is 'extremely rich' in species which are 'distributed primarily throughout the arid zone'. It includes rather 'large, bulky species with highly distinctive, curled petiolar node, with strongly curved carinae running between the central and lateral teeth' (Andersen, 2000). The taxonomy of the *schwiedlandi*-group will be dealt with in a separate paper. While this framework is being followed here, it is anticipated that further studies on this subgenus will result in refinements and changes to the groups recognised by Andersen (2000). This will be undertaken in a future study.

METHODS

Photographs of specimens were taken with a digital camera attached to a stereomicroscope and processed using Auto-Montage (Syncroscopy, Division of Synoptics Ltd, USA) and Adobe Photoshop CS2 (Adobe Systems Inc., USA). Unless otherwise indicated, images of new species depict the primary types. Those of previously described species are mostly of

type-compared voucher specimens from ANIC or QM collections.

The standard measurements and indices follow those of Kohout (2008): TL = Total length (the necessarily composite measurement of the outstretched length of the entire ant measured in profile); HL = Head length (the maximum measurable length of the head in perfect full face view, measured from the anterior-most point of the clypeal border or teeth, to the posterior-most point of the occipital margin); HW = Head width (width of the head in perfect full face view, measured immediately in front of the eyes); CI = Cephalic index ($HW \times 100 / HL$); SL = Scape length (length of the antennal scape, excluding the condyle); SI = Scape index ($SL \times 100 / HW$); PW = Pronotal width (greatest width of the pronotal dorsum, including the pronotal teeth, or across the humeri in species without teeth); MTL = Metathoracic tibial length (maximum measurable length of the tibia of the hind leg). All measurements were taken using a Zeiss (Oberkochen) SR stereomicroscope at 20x and 32x magnifications with an eyepiece graticule calibrated against a stage micrometer. All measurements are expressed in millimetres (mm).

Abbreviations for specimen data. acc. – accession; Ck – Creek; for. – forest; Mt – Mount; NP – National Park; Pdk – paddock; rf – rainforest; stn – station; w – worker/s; xing – crossing. Standard abbreviations are used for the states and territories.

Abbreviations for collectors name. ANA – A.N. Andersen; BBL – B.B. Lowery; CJB – C.J. Burwell; RJK – R.J. Kohout.

Abbreviations for institutions and depositories (with names of cooperating curators). AMNH – American Museum of Natural History, New York, NY, USA. (Dr J.M. Carpenter); AMSA – Australian Museum, Sydney, NSW, Australia (Drs D. Britton, D. Smith); ANIC – Australian National Insect Collection, CSIRO Entomology, Canberra, ACT, Australia (Dr S.O. Shattuck); BMNH – The Natural History Museum, London, UK (S. Ryder); CASC – California Academy of Sciences, San Francisco, CA., USA (Dr B.L. Fisher); CURT – Curtin University of Technology, Perth, WA, Australia (Drs J.D. Majer, B.E. Heterick); MCZC – Museum of Comparative Zoology, Harvard University, Cambridge, MA., USA (Dr S.P. Cover);

MHNG – Muséum d’Histoire Naturelle, Geneva, Switzerland (Dr B. Merz); MNHU – Museum für Naturkunde, Humboldt-Universität, Berlin, Germany (Dr F. Koch); MLAC - Natural History Museum, Los Angeles, CA, USA (Dr R.R. Snelling); MVMA – Museum of VIC, Melbourne, VIC., Australia (Dr K. Walker); NHMB – Naturhistorisches Museum, Basel, Switzerland (Dr D.H. Burckhardt); NHMW - Naturhistorisches Museum, Vienna, Austria (Dr H. Zettel; D. Zimmermann); NMNH – National Museum of Natural History, Smithsonian Institution, Washington, DC, USA (Drs T.R. Schultz, D.R. Smith); OXUM - University Museum, Oxford, UK (Dr D.J. Mann); QM – QLD Museum, Brisbane, QLD, Australia (Dr C.J. Burwell); SAMA – SA Museum, Adelaide, SA, Australia (A. McArthur); TERC – Tropical Ecosystems Research Centre, CSIRO Sustainable Ecosystems, Darwin, NT, Australia (Dr A.N. Andersen); WAMP – WA Museum Perth, WA, Australia (Dr T. Houston).

SYSTEMATICS

Polyrhachis Fr. Smith, 1857

Polyrhachis Fr. Smith, 1857: 58. Type species: *Formica binghamata* Drury, 1773: 73, pl. 38, figs 7, 8, worker; by original designation.

Campomyrma Wheeler, 1911

Campomyrma Wheeler, 1911: 860 (as subgenus of *Myrma* Billberg, 1820 = *Polyrhachis* Fr. Smith, 1857). Type species: *Polyrhachis clypeata* Mayr, 1862 (junior synonym of *Polyrhachis exercita* Walker, 1859), by original designation.

POLYRHACHIS GRAVIS
SPECIES-GROUP

Description. *Worker:* Medium-sized to relatively large ants (HL > 2.30) with general characteristics of the genus and subgenus. Mandibles with 5 or 6 teeth; anterior clypeal margin widely truncate medially, with truncate portion mostly irregularly denticulate. Head with sides in front of eyes rounded towards mandibular bases; behind eyes sides with short, postocular lateral ridges, forming distinct, narrowly rounded occipital corners, before converging into relatively narrow occipital margin. Eyes mostly moderately large (except in *P. hespera*) and convex; ocelli lacking. Pronotal humeri angular (as in *P. capillata* or *P. opacita*) (e.g. Figs 1G; 4E), or narrowly

rounded with pronotal lateral margins behind more-or-less emarginate (as in *P. curtospinosa*, *P. palmerae* or *P. unicornis*) (e.g. Figs 2G; 4G; 5G). Mesonotal and propodeal dorsa strongly converging posteriorly with lateral margins of propodeal dorsum terminating in short, upturned teeth. Petiole scale-like, with four spines or teeth of various configurations, or with a pair of dorsal spines and lateral teeth greatly reduced (as in *P. bispinosa*), or with a single dorsal spine and two lateral teeth (as in *P. pseudothrinax* and *P. unicornis*). Gaster in side view with anterior face straight; dorsoanterior margin of first gastral tergite with a distinct carina in most species, except *P. captiva* and *P. opacita*, where carina is only poorly indicated.

Queen. Apart from sexual characters, including three ocelli, complete thoracic structure and wings, very similar to worker. Armament of pronotum, propodeum and petiole distinctly reduced with spines and teeth shorter and stouter. Sculpturation, pilosity and colour virtually identical to worker. The only known queen is that of *P. pseudothrinax* described below.

Male. Males and immature stages unknown.

Distribution and biology. Species of the *P. gravis*-group are distributed primarily throughout the arid and monsoonal zones of central and northern Australia. Most are relatively rare and only occasionally collected in poorly known and isolated parts of the country. From a few known records, they are terrestrial nesters, building their nests under the ground with entrances covered by a rock, piece of wood, or simply concealed by a tuft of grass.

KEY TO WORKERS OF THE
P. GRAVIS SPECIES-GROUP

1. Dorsum of petiole armed with single spine 2
- Dorsum of petiole armed with pair of spines 3
2. Pronotal humeri simply angular; eyes smaller, distinctly convex; dorsal petiolar spine long and acute (Fig. 5B,E-F) *P. pseudothrinax* Hung

- Pronotal humeri produced into short, distinct teeth; eyes larger, only moderately convex; dorsal petiolar spine short and blunt (Fig. 5D,G-H). *P. unicornis* sp. nov.
- 3. Petiolar node in profile distinctly swollen at base (Fig. 1F) *P. bispinosa* sp. nov.
 - Petiolar node in profile slender, scale-like (e.g. Figs 1H; 3H) 4
- 4. Pilosity generally long, hair-like, rather abundant. 5
 - Pilosity generally short, bristle-like, less abundant 6
- 5. Large species (HL 2.68); pilosity very long, abundant; lateral margins of propodeal dorsum barrel-shaped (VIC). . . *P. captiva* sp. nov.
 - Smaller species (HL < 2.50); pilosity shorter, more sparse, notably on dorsum of mesosoma; lateral margins of propodeal dorsum converging posteriorly (WA) . . . *P. capillata* sp. nov.
- 6. Petiole high and slender in frontal view; dorsolateral margins steeply raised, strongly converging dorsally, forming single base for two slender dorsal spines (Fig. 4D,G); body black, somewhat semipolished, with appendages light orange (WA, Kimberley) *P. palmerae* sp. nov.
 - Petiole about as long as wide in frontal view; dorsolateral margins less steep and less strongly converging dorsally; bases of dorsal pair of spines more widely separated (e.g. Figs 2D; 4B); body rather dull black, opaque, with appendages black or dark reddish-brown 7
- 7. Dorsal petiolar spines tooth-like, distinctly shorter and stouter than lateral spines (Fig. 2D); bristle-like pubescence very sparse, virtually lacking from dorsum of mesosoma and petiole *P. curtospinosa* sp. nov.
 - Dorsal petiolar spines slender, distinctly longer than lateral spines (e.g. Figs 3B,D; 4B); bristle-like pubescence present on most body surfaces, including dorsum of mesosoma and petiole 8
- 8. Anterior margin of first gastral tergite with strongly raised carina 9
 - Anterior margin of first gastral tergite with only poorly indicated carina (WA) *P. opacita* sp. nov.
- 9. Antennal scapes longer (Sl >125); eyes more-or-less normal, moderately convex; pronotal humeri narrowly rounded with pronotal margins behind shallowly emarginated; greatest width of pronotal dorsum at middle of segment (NT, QLD) *P. gravis* Clark
 - Antennal scapes shorter (Sl 115); eyes distinctly smaller, strongly convex; pronotal humeri distinctly angular; greatest width of pronotal dorsum across humeri (WA) *P. hespera* sp. nov.

***Polyrhachis bispinosa* sp. nov.**
(Figs 1A-B, E-F)

Etymology. Name derived from the combination of the Latin words *bi-*, meaning two and *spina*, meaning thorn, spine, with reference to the twin dorsal petiolar spines.

Material. HOLOTYPE: NT: Kakadu NP, Nourlangie Rock, 12°51'S, 132°49'E, 12.i.1991, open sclerophyll forest, A.N. Andersen (worker). PARATYPES: NT: Kakadu NP, ii.2004, A. Fisher, PFS (worker); Bradshaw Stn, Yambaron Plateau, vii.1997 (A.L. Hertog) (worker). QLD: Mt Isa, xi.1997 (B. Hoffmann) (2 workers); Mt Isa Mines, xii.1997 (T. Griffiths) (worker); Mt Isa Mines, v.2005 (T. Griffiths) (worker). Type deposition: Holotype in ANIC; 2 paratype workers each in QM and TERC; 1 paratype worker each in BMNH and MCZC.

Description. *Worker:* Dimensions (holotype cited first): TL c. 8.72, 7.51-8.72; HL 2.21, 1.93-2.21; HW 1.93, 1.68-1.93; CI 87, 86-89; SL 2.28, 2.06-2.28; Sl 118, 113-123; PW 1.62, 1.40-1.62; MTL 2.93, 2.34-2.93 (4 measured).

Mandibles with 5 teeth distinctly reducing in length towards base. Anterior clypeal margin widely medially truncate with truncate portion distinctly denticulate. Clypeus with blunt, poorly defined median carina; weakly sinuate in profile with weakly impressed basal margin. Frontal carinae sinuate with weakly raised margins; central area almost flat with poorly indicated frontal furrow. Sides of head in front

of eyes rounding into mandibular bases in weakly convex line; behind eyes sides forming distinct, narrowly rounded, almost right-angled occipital corners, before converging into relatively narrow occipital margin. Eyes convex, in full face view clearly breaking lateral cephalic outline. Ocelli lacking. Pronotal humeri distinctly angular with margins converging anteriorly towards pronotal collar; lateral margins of pronotal dorsum converging into well impressed promesonotal suture. Dorsum of mesonotum with lateral margins strongly converging posteriorly towards distinct metanotal groove, forming almost straight line with lateral margins of propodeum and terminating in closely approximated, rather blunt, propodeal teeth; margins of teeth continued for short distance downwards into steeply concave propodeal declivity. Petiole with base distinctly swollen in lateral view (Fig. 1F); sides strongly convex towards dorsum armed with pair of closely approximated, dorso-posteriorly directed, slender spines; lateral petiolar spines reduced to mere angles. Anterior face of first gastral segment flat in lateral view, widely rounding onto dorsum; anterodorsal margin of first gastral tergite with blunt transverse carina.

Mandibles very finely striate with numerous piliferous pits. Head between frontal carinae and eyes distinctly, rather regularly, longitudinally striate; sculptural pattern distinctly less regular towards sides and on vertex where it is rugose with numerous piliferous pits. Dorsum of mesosoma generally longitudinally striate, with striae on pronotal dorsum somewhat posteriorly diverging and curving towards posterior corners of segment. Sides of mesosoma finely, more-or-less uniformly, wrinkled. Propodeal declivity and petiole finely, transversely striate. Gaster with base and sides of first tergite rather polished, intensity of sculpture increasing dorsally, becoming very finely, longitudinally striate towards posterior margin of segment; subsequent tergites finely reticulate-punctate.

Mandibles with numerous curved, golden hairs. Anterior clypeal margin with several, anteriorly directed, unequal length golden setae

medially and shorter setae fringing margin laterally. Numerous erect to semierect hairs on head, mesosoma, gaster and legs, hairs longest on clypeus and gastral venter and shortest on dorsum of mesosoma; antennae with numerous short, bristle-like, semierect hairs.

Black; mandibles medium reddish-brown with teeth black. Clypeus dark reddish brown with anterior margin narrowly bordered black. Antennal scapes dark reddish-brown with funiculi a shade lighter. Legs, including middle and hind coxae distinctly orange, tarsi a shade darker.

Sexuals and immature stages unknown.

Remarks. The characteristic distinctly swollen base of the petiole makes this species easily recognisable (Fig. 1F). The distribution of *P. bispinosa* appears to be restricted to the northern parts of the NT and the Mt Isa basin in north-western QLD.

Polyrhachis capillata sp. nov.
(Figs 1C-D, G-H)

Etymology. Derived from the Latin *capillus*, meaning hair, in reference to the relatively long hair distributed over most body surfaces.

Material. HOLOTYPE: WA: Kalgoorlie, WA, Museum, No. 50-1804/51 (worker). PARATYPE: data as for holotype, except WA, Museum No. 50-1812/41 (worker). Type deposition: Holotype in WAMP; paratype in ANIC.

Description. *Worker:* Dimensions. (holotype cited first) TL c. 9.68, 10.89; HL 2.28, 2.50; HW 1.96, 2.21; CI 86, 88; SL 2.56, 2.74; SI 131, 124; PW 1.87, 2.02; MTL 3.38, 3.83 (2 measured).

Mandibles with 6 teeth, distinctly reducing in length towards base. Anterior clypeal margin widely truncate medially, truncate portion bluntly and irregularly denticulate. Clypeus without distinct median carina; clypeus in profile very shallowly convex with raised anterior margin, virtually flat posteriorly. Frontal triangle only shallowly impressed. Frontal carinae sinuate with moderately raised margins; central area with flat frontal furrow. Sides of head in front of eyes converging towards mandibular bases in straight line; behind eyes sides converging

into rather narrow occipital margin. Eyes convex, in full face view clearly breaking lateral cephalic outline. Ocelli lacking. Pronotal humeri produced into distinct, laminate, triangular teeth, lateral pronotal margins behind teeth converging posteriorly into promesonotal suture. Mesonotal dorsum with anterior corners rounded; lateral margins converging posteriorly towards flat metanotal groove. Propodeal dorsum distinctly longer than wide with lateral margins converging posteriorly and terminating in short, upturned, divergent, acute teeth; dorsum curving into shallowly concave declivity in medially uninterrupted line. Petiole scale-like, virtually triangular in lateral view; dorsum armed medially with a pair of relatively short and slender, acute spines; inner margins of spines continuous medially, forming rather narrow, 'U' shaped dorsum of petiole; outer margins of spines steeply descending towards distinct, acute lateral spines that are only marginally shorter than dorsal pair (Fig. 1D). Gaster in lateral view with anterior face flat; anterior margin of first gastral tergite with blunt transverse carina.

Mandibles finely, longitudinally striate with numerous piliferous pits. Clypeus reticulate-punctate; head and dorsum of mesosoma reticulate-punctate with sculpture distinctly organised in mostly longitudinal striae, except on pronotal dorsum where striae are distinctly divergent towards lateral margins of segment; sides of mesosoma finely wrinkled. Anterior face of petiole rather coarsely reticulate-punctate with sculpture distinctly finer dorsally; posterior face more finely, transversely wrinkled. Gaster very finely reticulate, opaque.

Mandibles with numerous, curved, golden hairs at masticatory borders and along outer margins; truncate median portion of anterior clypeal margin with numerous, relatively long, golden setae; numerous shorter setae fringing margin laterally. All body surfaces, including appendages, with semierect to erect and variously curved, moderately long, golden hairs; hairs distinctly shorter and much diluted on pronotal and mesonotal dorsa; apical portion of propodeal dorsum with tuft of variously curved, medium length hairs. Hairs on head anteriorly

inclined, those on dorsum of mesosoma, petiole and dorsum of gaster mostly erect, hairs on gastral venter distinctly posteriorly curved. Diluted, closely appressed, greyish pubescence present only on coxae, virtually absent from rest of body.

Mandibles distinctly reddish-brown towards masticatory borders, with bases and teeth dark reddish-brown; antennae virtually black with only apical funicular segments reddish-brown; Legs medium reddish-brown, with tibiae a shade darker; tarsi black. Venter and apex of gaster very dark, reddish-brown.

Sexuals and immature stages unknown.

Remarks. *Polyrhachis capillata* is characterised by its relatively long hairs, notably on the front of the head, antennal scapes and legs, the distinct tuft of variously curved, medium length hairs on the posterior portion of propodeal dorsum around the propodeal teeth and the rather distinct, somewhat laminate humeral teeth (Fig. 1G). Only two specimens of *P. capillata* are known, both collected at Kalgoorlie in the Goldfields region of WA.

Polyrhachis captiva sp. nov.
(Figs 2A-B, E-F)

Etymology. Derived from the Latin *captivus*, meaning 'taken prisoner' in reference to the unique holotype being caught in a pitfall trap.

Material. HOLOTYPE: VIC, Nowingi, 34°36'S, 142°13'E, 20-23.xi.2004, top of sand dune, pitfall trap, DPI PIRVic Knoxfield (worker). Unique holotype in ANIC.

Description. *Worker:* Dimensions. TL c. 11.79; HL 2.68; HW 2.34; CI 87; SL 3.06; SI 131; PW 2.09; MTL 4.03 (1 measured).

Mandibles with 6 teeth, distinctly reducing in length towards base. Anterior clypeal margin widely truncate; truncate portion irregularly denticulate, with angular corners. Clypeus with blunt, poorly defined median carina; straight in profile with flat basal margin. Frontal triangle shallowly impressed. Frontal carinae sinuate with only moderately raised margins; central area with rather flat frontal furrow. Sides of head in front of eyes converging towards mandibular bases in straight line; behind eyes

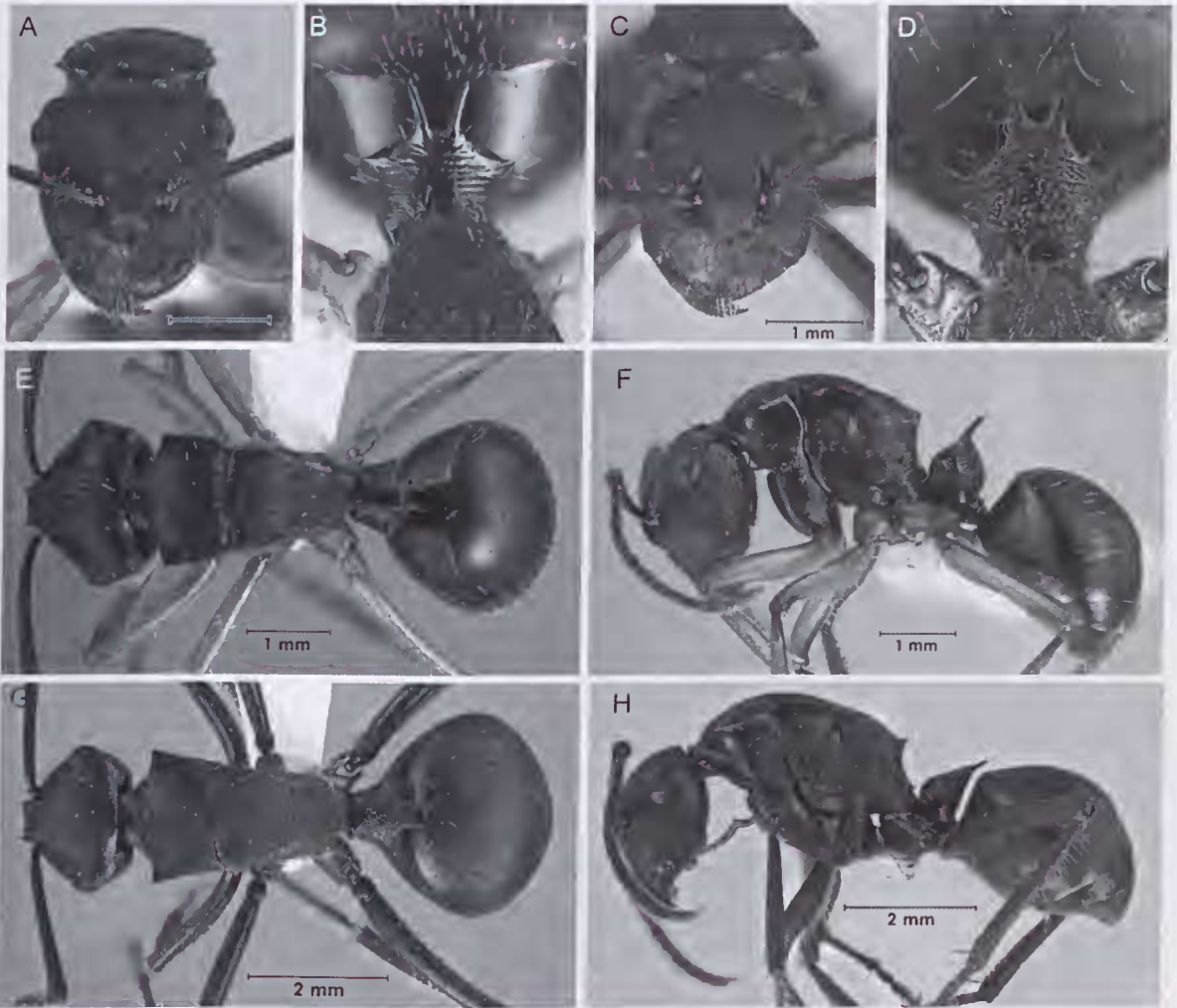


FIG. 1. *Polyrhachis gravis* species-group. Head in full-face view (A, C), petiole in frontal view (B, D), dorsal habitus (E, G), lateral habitus (F, H): *P. bispinosa* sp. nov. (holotype) (A-B, E-F); *P. capillata* sp. nov. (holotype) (C-D, G-H).

sides rounding into only moderately convex occipital margin. Eyes convex, in full face view clearly breaking lateral cephalic outline. Ocelli lacking. Pronotal humeri armed with distinct triangular, laminate, teeth; lateral margins behind humeri weakly emarginate and converging posteriorly in weakly convex line into distinct promesonotal suture. Mesonotal dorsum with anterior corners widely rounded; lateral margins converging posteriorly towards distinct metanotal groove. Propodeal dorsum with lateral margins barrel-shaped and

terminating posteriorly in short, upturned, acute teeth; dorsum curving into shallowly concave declivity in medially uninterrupted line. Petiole scale-like, virtually triangular in lateral view; dorsum armed medially with a pair of relatively short and slender, weakly divergent, acute spines; inner margins of spines continuous medially, forming rather narrow, 'U'-shaped dorsum of petiole; outer margins of spines steeply descending into distinct lateral angles, produced into short, acute spines (Fig. 2B). Gaster in lateral view with anterior face

flat; anterior margin of first gastral tergite with blunt, transverse carina.

Mandibles distinctly, longitudinally striate-rugose with numerous piliferous pits. Clypeus reticulate-punctate; head and dorsum of mesosoma reticulate-punctate with sculpture distinctly organised into relatively fine, mostly longitudinal striae; sides of mesosoma finely wrinkled. Petiole with anterior face rather coarsely, transversely reticulate-punctate; posterior face more finely, transversely wrinkled. Gaster very finely shagreened, somewhat semipolished.

Very hairy; mandibles with numerous, curved, golden hairs; truncate median portion of anterior clypeal margin with numerous, relatively long, pale golden setae; numerous shorter setae fringing margin laterally. All body surfaces, including appendages, with semierect to erect, generally long, pale golden or silvery hairs, some almost as long as greatest diameter of eyes. Hairs on head anteriorly inclined, those on dorsum of mesosoma and petiole mostly erect, those on gaster distinctly posteriorly curved. Closely appressed, greyish pubescence present only on anterior face of fore coxae, virtually absent from rest of body.

Mandibles distinctly reddish-brown towards masticatory borders; antennae virtually black with only apical funicular segments reddish-brown; Legs very dark reddish-brown; tarsi black with apical segments rather light reddish-brown. Venter and apex of gaster dark reddish-brown.

Sexuals and immature stages unknown.

Remarks. The unique holotype is a rather large specimen, distinguished from the other species of the group by its relatively large size, a pronotal dorsum with humeri produced into distinct, laminate, triangular teeth and weakly convex lateral margins (Fig. 2E) and a barrel-shaped propodeal dorsum. Postocellar process lacking and carina of dorsoanterior margin of first gastral segment only very weakly indicated. Pilosity very distinct, notably on dorsa of head, mesosoma, appendages and gaster, the later with hairs almost reaching in length the greatest diameter of eye; hairs

are virtually absent from sides of mesosoma. *Polyrhachis captiva* is the only species of the group known from VIC. The single known specimen was collected in a pitfall trap on the top of an inland sand dune.

Polyrhachis curtospinosa sp. nov.
(Figs 2C-D, G-H)

Etymology. Derived from the combination of the Latin *curtus*, meaning shorten and *spina*, meaning thorn or spine, in reference to the distinctly shortened dorsal petiolar spines.

Material. HOLOTYPE: NT: 6.5 km WNW of Yuendumu Mission, 10.iv.1963, McInnes & Dowsie (worker). PARATYPES: data as for holotype (worker). QLD: Mt Isa, CRC MIM study site, xii.1997 (T. Griffiths) (2 workers). Type deposition: Holotype in ANIC; 1 paratype each in BMNH, MCZC and QM.

Description. *Worker.* Dimensions: TL c. 9.22, 9.22-9.78; HL 2.31, 2.28-2.36; HW 2.12, 2.09-2.15; CI 92, 91-92; SL 2.43, 2.40-2.50; SI 115, 114-116; PW 1.84, 1.65-1.84; MTL 2.93, 2.87-2.96 (1+3 measured).

Mandibles with 6 teeth. Anterior clypeal margin widely truncate, with truncate portion irregularly denticulate. Clypeus smoothly curved without median carina; weakly sinuate in profile with flat base. Frontal triangle distinct. Frontal carinae sinuate with moderately raised margins; central area with rather indistinct frontal furrow. Sides of head in front of eyes weakly convex towards mandibular bases; behind eyes sides narrowly rounding into moderately convex occipital margin. Eyes convex, in full face view clearly breaking lateral cephalic outline. Ocelli lacking. Pronotal humeri bluntly angular, with lateral margins behind emarginate, before converging posteriorly towards well impressed promesonotal suture. Mesonotal lateral margins converging posteriorly, virtually forming a continuous line with margins of propodeum; metanotal groove flat. Propodeal dorsum strongly narrowed posteriorly with lateral margins terminating in upturned, somewhat medially flattened teeth; dorsum somewhat medially and posteriorly concave before curving through narrow gap between closely approximated teeth into steeply descending declivity. Petiole scale-like in lateral view;

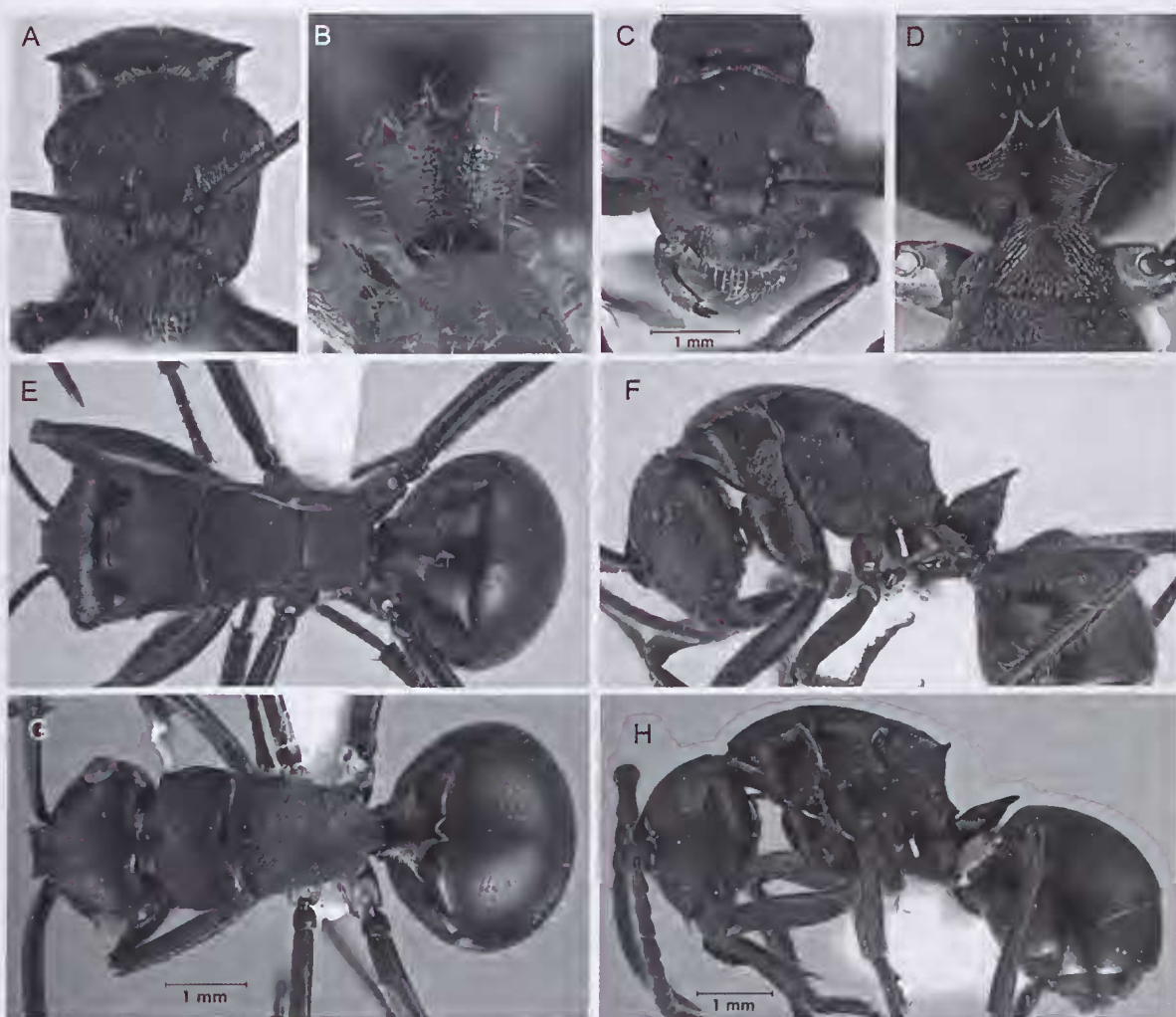


FIG. 2. *Polyrhachis gravis* species-group. Head in full-face view (A, C), petiole in frontal view (B, D), dorsal habitus (E, G), lateral habitus (F, H): *P. captiva* sp. nov. (holotype) (A-B, E-F); *P. curtospinosa* sp. nov. (holotype) (C-D, G-H).

dorsum armed with a pair of tooth-like spines, hardly longer than their basal width; outer margins of spines descending into slender, acute, lateral spines (Fig. 2D). Gaster in lateral view with anterior face flat; anterior margin of first gastral tergite with blunt transverse carina.

Mandibles finely, longitudinally striate with numerous piliferous pits. Clypeus reticulate-punctate; head distinctly, mostly longitudinally striate. Pronotal dorsum with distinctly finer striae that curve medially from humeral angles towards centre, before turning towards

promesonotal suture and posterior corners of segment. Dorsa of mesonotum and propodeum mostly longitudinally striate, striae on propodeum strongly converging posteriorly towards narrow gap between propodeal teeth. Sides of mesosoma and petiole finely wrinkled. Gaster very finely and closely reticulate, somewhat semipolished.

Mandibles with numerous, curved, golden hairs at masticatory and outer borders; anterior clypeal margin with numerous, relatively long, golden setae medially and fringe of shorter

setae laterally. Several semierect, rather short, golden hairs on clypeus; only a few, very short, bristle-like hairs along frontal carinae and on vertex, none breaking cephalic outline in full face view. Only a few, very short, anteriorly inclined hairs evident on pronotal dorsum of some specimens, no hairs on mesonotal and propodeal dorsa and petiole. Dorsum of gaster with only a few, very short, golden hairs along posterior margins of segments; hairs distinctly longer and posteriorly curved on vertex and gastral apex. Closely appressed, golden pubescence in various densities on most body surfaces, virtually absent from dorsum of mesosoma.

Head, mesosoma and petiole generally black. Mandibles, mandibular bases and anterior portion of clypeus distinctly orange or light reddish-brown, narrowly bordered brown or black. Antennae black or very dark brown with funicular segments progressively lighter reddish-brown towards apices. Legs, including coxae, light to medium reddish-brown with basal portion of tibiae and tarsi black; apical tarsal segments reddish-brown. Dorsum of gaster black with dorsoanterior margin, sides, venter and apex progressively lighter reddish-brown.

Sexuals and immature stages unknown.

Remarks. *Polyrhachis curtospinosa* is very similar to *P. gravis* but differs in having distinctly shorter antennal scapes (SI 114-116 in *curtospinosa* versus 125-131 in *gravis*), very short, tooth-like dorsal petiolar spines and mesosomal dorsum that completely lacks the short, bristle-like pilosity seen in *P. gravis*. The distribution of *P. curtospinosa* is similar to that of *P. bispinosa* and appears to be restricted to the northern parts of the NT and the Mt Isa basin in north-western QLD.

Polyrhachis gravis Clark, 1930
(Figs 3A-B, E-F)

Polyrhachis (*Campomyrma*) *gravis* Clark, 1930: 15, fig. 1, nos 12, 12a. Holotype and paratype workers. Type locality: NT: Burt Plain (C. Barrett), MVMA (examined).

Dimensions (holotype cited first, paratype second): TL c. 10.58, 8.77, 8.72-10.58; HL 2.43, 2.25, 2.18-2.48; HW 2.17, 1.93, 1.93-2.20; Cl 89, 86, 86-92; SL 2.74, 2.53,

2.49-2.81; SI 126, 131, 125-131; PW 1.72, 1.56, 1.56-1.72; MTL 3.28, 3.09, 3.09-3.38 (1+1+14 measured).

Material. WA: 147.1 km SSE Newman, 24°34'28"S, 120°18'28"E, iv.1997, calcrete mulga woodland, pitfall trap (S.van Leeuwen & R.N. Bromilow (w)). NT: 6.5 km WNW of Yuendumu Mission, 10.iv.1963 (McInness & Dowse) (w); c. 56 km E of Sandy Blight Junct., 5.iv.1963 (McInness & Dowse) (w); Kunoth Pdk, nr Alice Springs, 24.x.1974 (P.J.M. Greenslade) (w). QLD: Mitchell Hwy, 11 km S Charleville, 26°30'S, 146°11'E, 13-22.v.1991 (T. Dahms & G. Sarnes) (w); 'Gumbardo' site 8, 26°4.4'S, 144°45.9'E, iv.2001, mulga pitfall trap (T. Beutel) (w); ditto, site 4, 26°5.8'S, 144°45.0'E, iv.2001, mulga pitfall trap (T. Beutel) (w).

Sexuals and immature stages unknown.

Remarks. Based on the original description, it appears that both available specimens of *P. gravis* were regarded by Clark as equals, i.e. syntypes. However, one of the specimens is furnished with a red tag which reads: T-6238, Type. When Dr Robert W. Taylor examined both specimens, he evidently considered this specimen to be the holotype and added a new red tag reading 'HOLOTYPE, T-6238, *Polyrhachis gravis* Clark'. I am following Taylor's decision and accept this specimen as the holotype of *P. gravis*, with the second specimen labelled with 'PARATYPE, T-9088' on a blue tag, considered a paratype.

Polyrhachis gravis is a characteristic species of the dry, mulga and spinifex clad country of the central Australia. It has been collected in the Pilbara region in WA and across the NT to western QLD. In spite of being widely distributed, *P. gravis* is relatively morphologically uniform with only minor variations from the types detected in some specimens from WA and QLD. These are manifest mostly in the direction of the body sculpturation, the apical width of the propodeal dorsum and the length of the dorsal petiolar spines that can vary even in specimens of a single nest series (e.g. specimens from Kunoth Pdk, nr Alice Springs).

Polyrhachis hespera sp. nov.
(Figs 3C-D, G-H)

Etymology. Derived from the Latin *hesperius*, meaning western, referring to its WA origin.

Material. HOLOTYPE: WA, RGC Eneabba, c. 29°49'S, 115°16'E, iii.1998, Paul West (worker). Type distribution: Unique holotype in ANIC.

Description. *Worker*: Dimensions: TL c. 9.42; HL 2.25; HW 2.03; CI 90; SL 2.34; SI 115; PW 1.65; MTL 2.99 (1 measured).

Mandibles with 6 teeth. Anterior clypeal margin widely truncate, truncate portion irregularly denticulate, laterally delimited by blunt angles. Clypeus without distinct median carina; straight in profile with flat base. Frontal triangle weakly impressed. Frontal carinae sinuate with moderately raised margins; central area with rather indistinct frontal furrow. Sides of head in front of eyes evenly convex towards mandibular bases; behind eyes sides narrowly rounding into distinct occipital corners. Eyes strongly convex, in full face view clearly breaking lateral cephalic outline. Ocelli lacking. Pronotal humeri bluntly angular, with lateral margins converging posteriorly towards weakly impressed promesonotal suture. Mesonotal and propodeal lateral margins weakly sinuate, converging posteriorly and terminating in upturned teeth; propodeal dorsum curving through narrow gap between teeth into steep, weakly concave declivity. Petiole scale-like in lateral view; dorsum armed with a pair of closely approximate spines; outer margins of spines descending into acute, shorter and slender, lateral spines (Fig. 3D). Gaster in lateral view with anterior face flat; anterior margin of first gastral tergite with distinct transverse carina.

Mandibles finely, longitudinally striate with numerous piliferous pits. Clypeus reticulate-punctate; head distinctly irregularly rugose, with sculpture on vertex and along frontal carinae somewhat longitudinally striate-rugose. Pronotal dorsum mostly longitudinally striate; dorsa of mesonotum and propodeum mostly longitudinally striate-rugose. Sides of mesosoma and petiole finely wrinkled. Gaster very finely and closely reticulate-striate.

Mandibles with numerous, curved, golden hairs at masticatory and outer borders; anterior clypeal margin with numerous, relatively long, somewhat reddish-golden setae medially

and fringe of shorter setae laterally. Several semierect, rather short, golden hairs, on clypeus; very short, bristle-like hairs on head and mesosomal dorsum, metapleura and a few hairs along lateral margins of petiole. Dorsum of gaster with numerous, very short, golden hairs, hairs increasing in length towards gastral apex and on venter, where they are distinctly longer and posteriorly inclined. Antennae and legs with numerous, very short, bristle like hairs on all surfaces. Closely appressed, rather grey or silvery pubescence very sporadic on various body surfaces, virtually absent from dorsum of head, mesosoma and petiole.

Mandibles light reddish-brown at masticatory borders, distinctly darkening towards bases; teeth and outer edges bordered black. Antennal scapes black; basal funicular segments black at bases, subsequent funicular segments progressively lighter, reddish-brown towards apices. Most of body, including fore coxae and petiole black; middle and hind coxae and femora medium reddish-brown; tibiae and tarsi black. Gaster black with gastral segments bordered reddish-brown; apex of gaster reddish-brown.

Sexuals and immature stages unknown.

Remarks. *Polyrhachis hespera* is quite similar to *P. gravis*. They share a distinctly raised carina on the anterior margin of first gastral tergite and have quite similar configurations of the petiole. It differs from the latter by its shorter antennal scapes (SI 115 in *hespera* versus 125–131 in *gravis*), distinctly smaller and strongly convex eyes, and by having the pronotal dorsum widest across the humeri. In contrast, the eyes in *P. gravis* are comparatively larger and less convex and the pronotal dorsum is widest at about its midlength. *Polyrhachis hespera* is known only from a single specimen collected at Eneabba in the Batavia Coast region of WA.

Polyrhachis opacita sp. nov.
(Figs 4A–B, E–F)

Etymology. Derived from the Latin *opacus*, meaning shady, obscure, in reference to its very finely striate, opaque gaster.

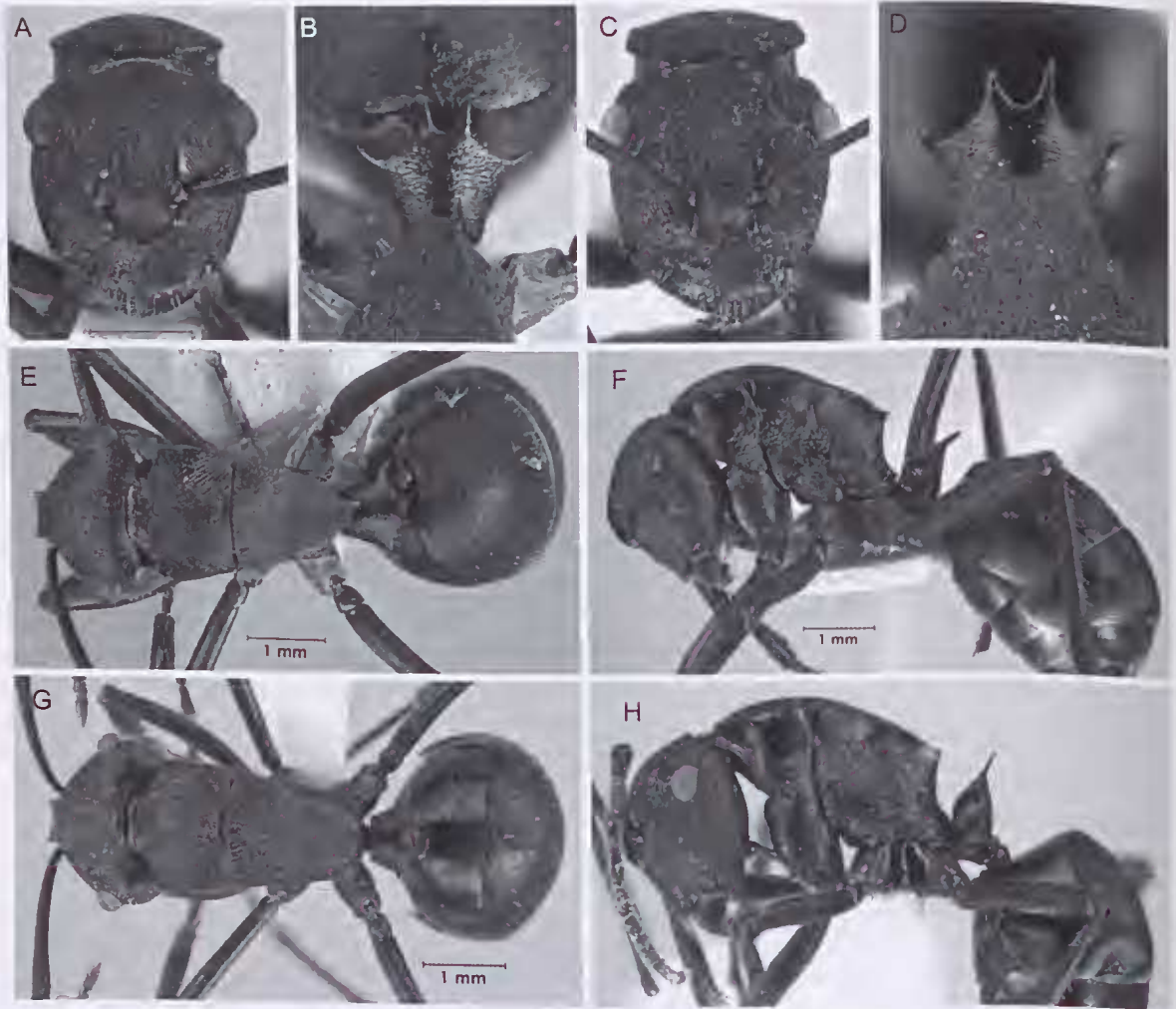


FIG. 3. *Polyrhachis gravis* species-group. Head in full face view (A, C), petiole in frontal view (B, D), dorsal habitus (E, G), lateral habitus (F, H): *P. gravis* Clark (holotype) (A-B, E-F); *P. hespera* (holotype) (C-D, G-H).

Material. HOLOTYPE: WA, Coral Bay, vi.1991, I. & G. Grose (worker). PARATYPE: data as for holotype (1 worker). Type deposition: Holotype in ANIC; 1 paratype in WAMP.

Description. *Worker*: Dimensions (holotype cited first): TL c. 9.52, 9.78; HL 2.28, 2.31; HW 1.96, 2.06; CI 86, 89; SL 2.46, 2.50; SI 125, 121; PW 1.81, 1.81; MTL 3.28, 3.22 (2 measured).

Mandibles with 6 teeth. Anterior clypeal margin widely truncate, truncate portion denticulate medially. Clypeus without distinct median carina; straight in profile with flat base.

Frontal triangle distinct. Frontal carinae sinuate with moderately raised margins; central area with rather indistinct frontal furrow. Sides of head in front of eyes weakly convex towards mandibular bases; behind eyes sides narrowly rounding into distinct occipital corners. Eyes convex, in full face view clearly breaking lateral cephalic outline. Ocelli lacking. Pronotal humeri bluntly angular; lateral margins of pronotum converging posteriorly towards moderately impressed promesonotal suture. Mesonotal and propodeal lateral margins converging posteriorly in single, weakly

sinuate line; metanotal groove flat. Propodeal dorsum strongly narrowed posteriorly with lateral margins terminating in upturned, somewhat dorsomedially flattened teeth; dorsum curving through narrow gap between closely approximate teeth into steeply descending declivity. Dorsum of petiole armed with a pair of slender spines; outer margins of spines descending into distinctly shorter, acute, lateral spines (Fig. 4B). Gaster in lateral view with anterior face flat; anterior margin of first gastral tergite with poorly indicated carina.

Mandibles finely, longitudinally striate with numerous piliferous pits. Head, including clypeus, reticulate-striate. Pronotal dorsum with rather irregular, somewhat obliquely directed striae; mesonotal dorsum longitudinally striate with sculpture on propodeal dorsum rather irregularly rugose. Sides of mesosoma and petiole finely wrinkled. Gaster very finely and closely reticulate-striate, opaque.

Mandibles with numerous, curved, golden hairs; anterior clypeal margin with numerous, relatively long, reddish-golden setae medially and fringe of shorter setae laterally. Numerous, medium length hairs on clypeus; rather abundant, distinctly shorter, bristle-like hairs on rest of head; distinctly less abundant, short, bristle-like hairs, on dorsum of mesosoma and along lateral margins of petiole. Dorsum of gaster with numerous, short, posteriorly inclined hairs, with hairs distinctly increasing in length towards apex; venter of gaster with numerous, medium to rather long, golden hairs. Closely appressed, greyish or silvery pubescence in various densities on most body surfaces, virtually absent from dorsum of mesosoma.

Whole body, including fore coxae and dorsum of gaster, black. Mandibles black, with teeth and bases reddish-brown; narrow band along masticatory borders light reddish-brown. Antennae black with only apical funicular segments light reddish-brown. Femora and middle and hind coxae medium reddish-brown; tarsi black. Venter of gaster and apex reddish-brown.

Sexuals and immature stages unknown.

Remarks. *Polyrhachis opacita* is characterised by the very finely striate, opaque gaster with the carina on anterior margin of the first gastral tergite only poorly developed. This is another species evidently restricted to WA, with both known specimens collected on a single occasion at Coral Bay.

Polyrhachis palmerae sp. nov.
(Figs 4C-D, G-H)

Etymology. Named after the collector, Ms Carol Palmer, a researcher with the Biodiversity Conservation Division of the NT Department of Natural Resources, Environment, Arts and Sport, who collected many ants, including several new species of *Polyrhachis*, during a broader fire project in the Kimberley region of WA.

Material. HOLOTYPE: WA: Kimberley area, Bachesten Ck, vii.2001, Carol Palmer (Kimberley Fire Project 8.3L) (worker). PARATYPES: data as for holotype (except Kimberley Fire Project 4.3L) (2 workers); Kimberley, Mitchell Plateau, vi.2007, J. Lanoue (Fire Study sp. B) (worker). Type deposition: Holotype in ANIC; 1 paratype worker each in BMNH, MCZC, QM, WAMP.

Description. *Worker:* Dimensions (holotype cited first): TL c. 9.07, 8.52-9.27; HL 2.28, 2.18-2.31; HW 2.00, 1.81-2.03; CI 88, 87-89; SL 2.25, 2.12-2.34; SI 112, 109-117; PW 1.72, 1.62-1.84; MTL 2.81, 2.71-3.12 (1+4 measured).

Mandibles with 6 teeth. Anterior clypeal margin widely truncate, truncate portion irregularly denticulate. Clypeus with short, poorly defined, median carina towards base; very weakly sinuate in profile. Frontal triangle distinct. Frontal carinae sinuate with weakly raised margins; central area with indistinct frontal furrow. Sides of head in front of eyes convex towards mandibular bases; behind eyes sides rounding into distinct occipital corners. Eyes convex, in full face view clearly breaking lateral cephalic outline. Ocelli lacking. Pronotal humeri bluntly angular, somewhat laminate, with rather distinct anterior margins converging towards pronotal collar. Lateral pronotal margins converging towards moderately impressed promesonotal suture. Mesonotal lateral margins converging posteriorly into rather flat, metanotal groove. Propodeal lateral margins strongly converging posteriorly and terminating in relatively short,

upturned teeth; dorsum descending into steep, weakly concave declivity in medially uninterrupted line. Dorsum of petiole strongly raising medially and dorsally, terminating in two, closely approximate, divergent spines; outer margins of spines steeply descending into slender, acute, lateral spines (Fig. 4D). Gaster in lateral view with anterior face flat; anterior margin of first gastral tergite with distinct transverse carina.

Mandibles very finely, longitudinally striate with numerous piliferous pits. Clypeus reticulate-punctate anteriorly, striate towards base; head distinctly, longitudinally reticulate-striate. Pronotal dorsum mostly longitudinally striate, striae distinctly curving towards posterior angles of segment; mesonotal dorsum longitudinally striate; propodeal dorsum with striae distinctly directed posteriorly and medially. Sides of mesosoma below lateral margins of segment very smooth and polished, sculpture becoming wrinkled ventrally. Petiole finely wrinkled. Dorsum of gaster very finely, longitudinally striate, somewhat polished.

Mandibles with several, curved, golden hairs at masticatory borders and along outer margins; truncate median portion of anterior clypeal margin with a few, relatively long, golden setae and shorter setae fringing margin laterally. Clypeus with several, medium length hairs, hairs on rest of head distinctly shorter, bristle-like. Dorsum of mesosoma with numerous, rather short, variously inclined hairs; numerous hairs lining lateral margins of petiole. Antennae and legs with numerous, bristle-like hairs on all surfaces. Gaster with semierect, mostly posteriorly inclined, medium length hairs, distinctly longer on gastral venter and apex. Closely appressed, rather sparse, golden pubescence variously distributed on most body surfaces, virtually absent from dorsa of head, mesosoma and petiole.

Mandibles, including bases, distinctly light reddish-brown, teeth very dark, almost black. Clypeus medium reddish-brown anteriorly, anterior border lined black. Body, including fore coxae, black, distinctly polished. Antennal scapes medium reddish-brown with apices

a shade lighter; funiculi rather light reddish-brown at bases, segments progressively lighter, yellow, towards apices. Legs, including middle and hind coxae, very distinctly light orange; tarsi a shade darker.

Sexuals and immature stages unknown.

Remarks. The black body with light orange appendages and rather polished appearance makes *P. palmerae* easily recognisable. The petiole is also very characteristic, with its highly and steeply raised dorsum which virtually forms a single base for two, slender, divergent spines (Fig. 4D). *Polyrhachis palmerae* is known only from the Kimberley region in WA where it appears to be endemic.

Polyrhachis pseudothrinax Hung, 1967
(Figs 5A-B, E-F)

Polyrhachis pseudothrinax Hung, 1967: 199, figs 1-6. Holotype & paratype worker. Original localities: NT, Daly River (H. Wesselmann) (holotype), MLAC (examined); QLD, Cape York Pen., Coen (P.F. Darlington) (paratype), MCZC (examined).

Material. WA, 12 km N of Broome, 10.x.1993, savannah woodland/spinifex (B.B. Lowery) (w); 35 km E of Kununurra, 25.v.1994, savannah woodland/spinifex (B.B. Lowery) (w); Glenelg R., 15°48'S, 124°44'E, vi.1988, woodland (ANA) (w); Mirima, nr Kununurra, 7.iv.2004 (ANA) (w); Kimberley region, Cape Bernier, 14°07'S, 127°31'E, vi.1988, woodland (ANA) (w); ditto, King Edward R., 15°09'S, 126°09'E, vi.1988 (ANA) (w); ditto, Bachesten Ck., vii.2001 (C. Palmer) (w); ditto, Yampi 2 Stn, v.2002 (C. Palmer) (w). NT, Melville I., Maxwell Ck., 27.vi.2008 (B. Hoffmann) (w); Groote Eylandt, 16-19.ix.1991 (G. Webb) (w); ditto, 10-12.iv.1992 (G. Webb) (w); Kakadu NP, Border Store, S of Ubirr, 23.v.1994, savannah woodland (B.B. Lowery) (w); ditto, Kapalga, 12°33'S, 132°19'E, 31.i.1991 (S.O. Shattuck #2240.5) (w); ditto, Kapalga, 1991 (ANA) (q); ditto, Nanguluwurr, 4-5.xii.1988 (R.R. Snelling) (w); ditto, Ranger Uranium lease site, vii.1999 (ANA) (w); ditto, ii.1993 (ANA) (q); ditto, Baroalba Springs, 31.xii.1989 (ANA) (w); Douglas Hot Springs, 4.vii.1985 (B.B. Lowery) (w); Douglas Daly, vii.1998 (O. Price) (w); Auvergne Stn, 27.vii.1999 (S. Eldridge) (w); Umbruwarra Gorge, SW of Pina Ck., 30.iii.1997 (B. Hoffmann) (w); Borrook Stn, Pine Ck, 10.x.1995 (ANA) (w); Hayfield, vi.1996 (A. Fisher) (q); Bradshaw Stn, VIC R. area, vi.1997 (A.L. Hertog) (w); Katherine Gorge NP, 14°19'S, 132°28'E, 25.xi.1993, sav. woodland (RJK acc. 93.62) (w). QLD, 10 km SE of Croydon, nr Alehvale Stn, 18°15'S, 142°19'E, 3-5.x.1977 (RJK acc. 77.13) (w); Mt Isa, xi.1997 (B. Hoffmann) (w); Mt Isa Mines, v.2005 (T. Griffiths, Plume Outfall Study) (w);

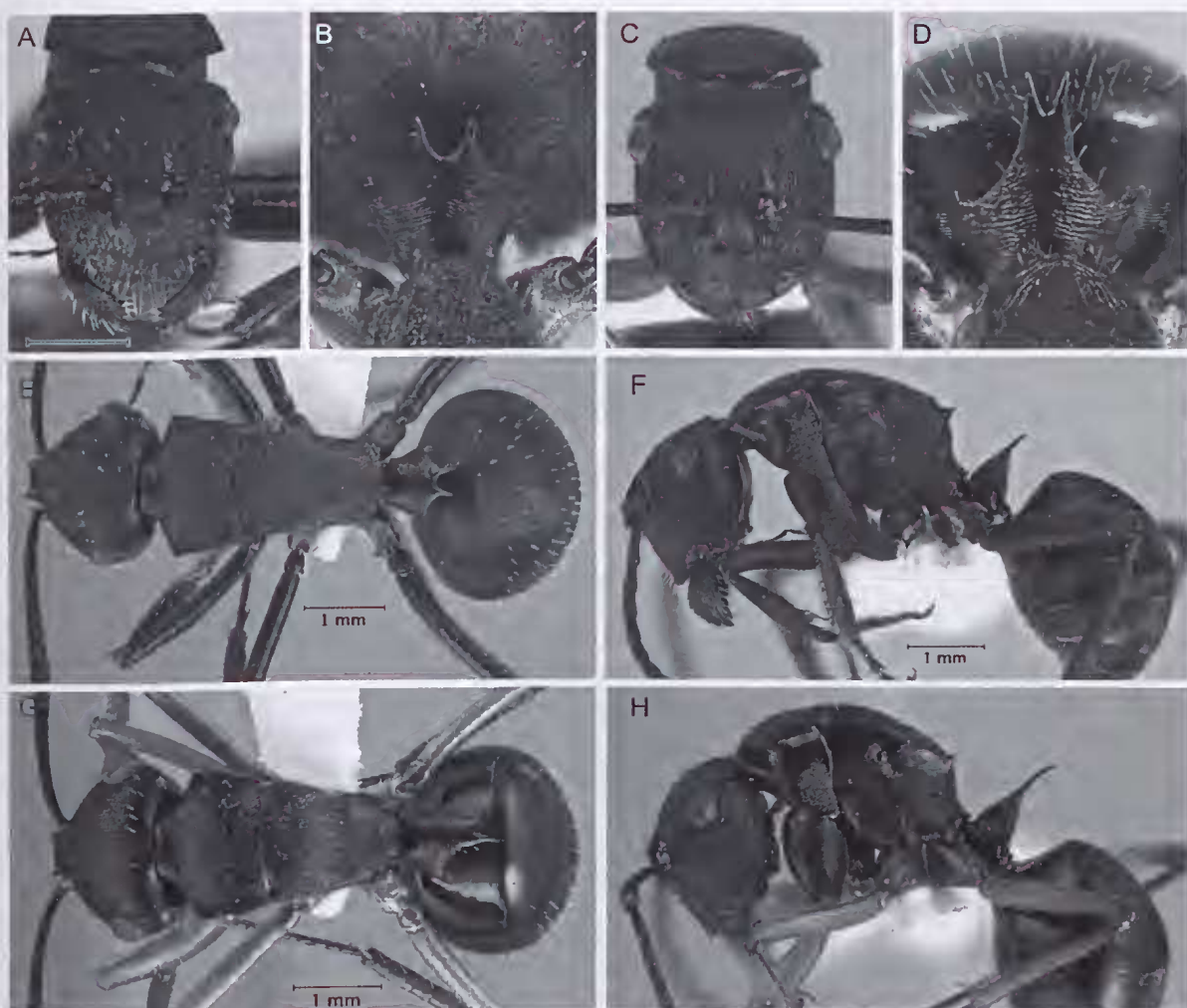


FIG. 4. *Polyrhachis gravis* species-group. Head in full-face view (A, C), petiole in frontal view (B, D), dorsal habitus (E, G), lateral habitus (F, H): *P. opacita* sp. nov. (holotype) (A-B, E-F); *P. palmerae* sp. nov. (holotype) (C-D, G-H).

30mi N of Tambo, 14.xii.1972 (BBL) (w); German Ck mine, nr Middlemount, 200 km NW of Rockhampton, 23°00'S, 148°30'E, 1997 (ANA) (w); Monklands Stn. 2(2), xi.1999 (K. Schneider 4/00, Tree Clearing Project) (w); Byganna Stn 56(3), vii.1999 (K. Schneider 3/00, TCP) (w); Townsville, Field Training area/Tabletop, 19°27'S, 146°24'E, vii.1999 (J. Woinarski) (w); ditto, vii.1999 (J. Woinarski) (w).

Description. *Worker*: Dimensions (holotype cited first, paratype second): TL c. 8.37, 8.47, 7.00-9.22; HL 2.06, 2.06, 1.72-2.25; HW 1.75, 1.72, 1.43-2.01; CI 85, 83, 83-90; SL 2.09, 2.12, 1.81-2.34; SI 119, 123, 112-127; PW 1.62, 1.62,

1.31-1.87; MTL 2.65, 2.65, 2.25-2.90 (1+1+18 measured).

Queen. (not previously described) Dimensions: TL c. 9.42; HL 2.21; HW 1.81; CI 82; SL 2.15; SI 119; PW 2.06; MTL 2.81 (1 measured).

Queen very similar to worker with usual characters identifying full sexuality, including three ocelli, complete thoracic structure, wings and distinctly larger eyes. Pronotal humeri armed with distinct, somewhat dorsally flattened teeth. Mesoscutum marginally wider

than long with widely rounded anterior margin in dorsal view; median line distinct; parapsides flat; anterior face in profile rounding onto relatively low, flat dorsum. Mesoscutellum only marginally elevated above dorsal plane of mesosoma. Propodeal dorsum with lateral margins strongly converging posteriorly, terminating in upturned, dorsolaterally directed, acute teeth; dorsum between them descending into steep declivity in medially uninterrupted line. Petiole very similar to worker, only median spine distinctly shorter. Sculpturation, pilosity and colour scheme virtually as in worker.

Male and immature stages unknown.

Remarks. *Polyrhachis pseudothrinax* appears to be somewhat more common than other species of the *P. gravis*-group. It ranges from north QLD westwards across the NT to the Kimberley region of WA. Throughout its distribution, *P. pseudothrinax* is relatively morphologically uniform, however, the QLD populations appear to have a longer antennal scapes (SI 118-126 versus 112-120 in NT populations), with the exception of a single specimen from Melville Island (SI 127). When describing this species, Hung (1967) also noted differences in sculpturation of the propodeal dorsum, however, following examination of numerous specimens across the whole range of this species it is apparent that the variability in striation is similar to that displayed by other species of the *P. gravis*-group. Some specimens also appear to differ in the shape and length of the propodeal dorsum (Andersen, Pers. comm.), however, subsequent examination failed to reveal any other associated taxonomically important characters and I consider they represent only variants from the 'prototype' of this species.

With its single middle petiolar spine, *P. pseudothrinax* is easily recognised. Only *P. unicornis*, described below, shares this character, however, it differs in having the spine less acute and shorter (Fig. 5D, G) and in some specimens weakly emarginate apically. They also differ in the shape of their eyes which, in *P. unicornis*, are larger and distinctly less convex (Fig. 5C). In addition, the sculpturation on the pronotal

dorsum is distinctly transverse in *P. unicornis*, while it is more-or-less longitudinal in *P. pseudothrinax* and the bristle-like pubescence is distinctly longer and rather abundant in *P. pseudothrinax*, while it is much shorter and rather sporadic in *P. unicornis*. Their colour patterns are very similar with a black body and very distinct, light reddish-brown or orange-coloured legs, however, the anterior portion of clypeus in *P. unicornis* is distinctly lighter reddish-brown, while it is black throughout in the other species.

Polyrhachis unicornis sp. nov.
(Figs 5C-D, G-H)

Etymology. Derived from the combination of the Latin *unicus*, meaning sole, and *cornu*, meaning horn, in reference to the single dorsal petiolar spine.

Material. HOLOTYPE: WA: Kimberley area, Joonjoo Stn, v.2002, C. Palmer (worker). PARATYPES: data as for holotype (3 workers); Beagle Bay, vi.2001 (C. Palmer) (1 worker); 12 km N of Broome, savannah woodland, 10.x.1993 (B.B. Lowery) (2 workers). Type deposition: Holotype in WAMP; 2 paratypes in ANIC; 1 paratype each in BMNH, MCZC, QM and TERC.

Description. *Worker.* Dimensions: TL c. 8.62, 6.90-8.62; HL 2.06, 1.72-2.06; HW 1.81, 1.51-1.81; Cl 88, 86-89; SL 2.12, 1.84-2.12; SI 117, 117-126; PW 1.56, 1.26-1.56; MTL 2.81, 2.25-2.81 (1+6 measured).

Mandibles with 5 teeth, distinctly reducing in length towards base. Anterior clypeal margin widely truncate, truncate portion bluntly denticulate, laterally delimited by blunt corners. Clypeus without distinct median carina; very shallowly concave in profile with flat basal margin. Frontal triangle distinct. Frontal carinae sinuate with only moderately raised margins; central area with poorly distinct frontal furrow. Sides of head in front of eyes converging towards mandibular bases in virtually straight line before rounding into mandibular bases; behind eyes sides rounding into distinct occipital corners. Eyes relatively large, only moderately convex, in full face view breaking lateral cephalic outline. Ocelli lacking. Pronotal humeri armed with distinct blunt teeth, lateral margins behind narrowly emarginate (Fig. 5G) before converging posteriorly and rounding into relatively shallow promesonotal suture.

Mesonotal dorsum with anterior lateral margins converging posteriorly towards flat, indistinct metanotal groove. Propodeal dorsum with lateral margins converging posteriorly and terminating in upturned, somewhat dorsomedially flattened, acute teeth; dorsum shallowly concave medially, before curving into steeply descending declivity in medially uninterrupted line. Petiole scale-like, virtually triangular in lateral view; dorsum armed with relatively short, weakly posteriorly curved, median spine; in some specimens, including holotype, spine is weakly emarginate apically; lateral petiolar spines distinct, acute. Gaster in lateral view with anterior face flat, distinctly lower than full height of petiole; anterior margin of first gastral tergite with blunt transverse carina.

Mandibles very finely striate with numerous piliferous pits. Clypeus reticulate-punctate; head along frontal carinae and on sides and vertex rather regularly, longitudinally striate. Pronotal dorsum transversely striate, striae somewhat medially bowed and curving towards posterior corners of segment. Mesonotal and propodeal dorsa finely striate, striae converging posteriorly along lateral margins of segments. Propodeal declivity, petiole and anterior face of gaster finely, transversely striate. Dorsum and sides of gaster very finely, longitudinally striate.

Mandibles at masticatory borders and along outer margins with numerous, medium length, curved, golden hairs. Anterior clypeal margin with several, anteriorly directed, relatively long, golden setae medially and shorter setae fringing margin laterally. Head with numerous, erect to semierect, bristle-like, short hairs, only few hairs breaking lateral cephalic outline at occipital corners in full face view. Dorsum of mesosoma virtually without hairs, except a few, very short, erect hairs towards propodeal teeth and declivity. Dorsum of first gastral tergite without hairs; medium length, posteriorly directed hairs rather abundant on subsequent tergites, venter and apex of gaster. Antennae and legs, including coxae, with numerous short, bristle-like, semierect hairs.

Black; mandibles and anterior portion of clypeus distinctly light reddish-brown; teeth,

mandibular borders and anterior clypeal margin narrowly bordered black. Antennae reddish-brown with funiculi towards apices a shade lighter. Fore coxae dark, reddish-brown, in some specimens somewhat blotched light brown. Legs, including mid and hind coxae, distinctly orange, tarsi a shade darker. Gastral apex reddish-brown.

Sexuals and immature stages unknown.

Remarks. Similar to *P. pseudothrinax* with which it shares the single median spine on the petiole. However, the spine in *P. unicornis* is distinctly shorter and blunt and in some specimens, including the holotype, its apex is shallowly emarginate. Most of the characters distinguishing the species are given above in the remarks section of *P. pseudothrinax*.

POLYRHACHIS MICANS SPECIES-GROUP

CHARACTERS OF THE *P. MICANS* SPECIES-GROUP

Description. *Worker:* Medium-sized to relatively large ants (HL > 2.14) with general characteristics of the genus and subgenus. Head triangular in frontal view, sides in front of eyes rounding towards mandibular bases; sides in most species distinctly wider behind eyes with postocular and lateral ridges extending on each side towards occipital corners. Eyes relatively large, situated close to occipital corners. Dorsum of mesosoma relatively wide and short with pronotal humeri bluntly angular (distinctly angular in some *P. prometheus* specimens). Mesonotal dorsum with lateral margins converging posteriorly (as in *P. micans* or *P. incerta*) or distinctly posteriorly rounded (as in *P. prometheus*). Metanotal groove rather flat, poorly indicated, except in *P. prometheus* where it is short and clearly impressed. Propodeal dorsum strongly converging posteriorly in most species, except in *P. prometheus* where it is very narrow, about 1.5 times longer than wide, with virtually parallel lateral margins. Petiole scale-like, armed with four subequal spines (as in *P. micans*), or two distinctly elongated dorsal

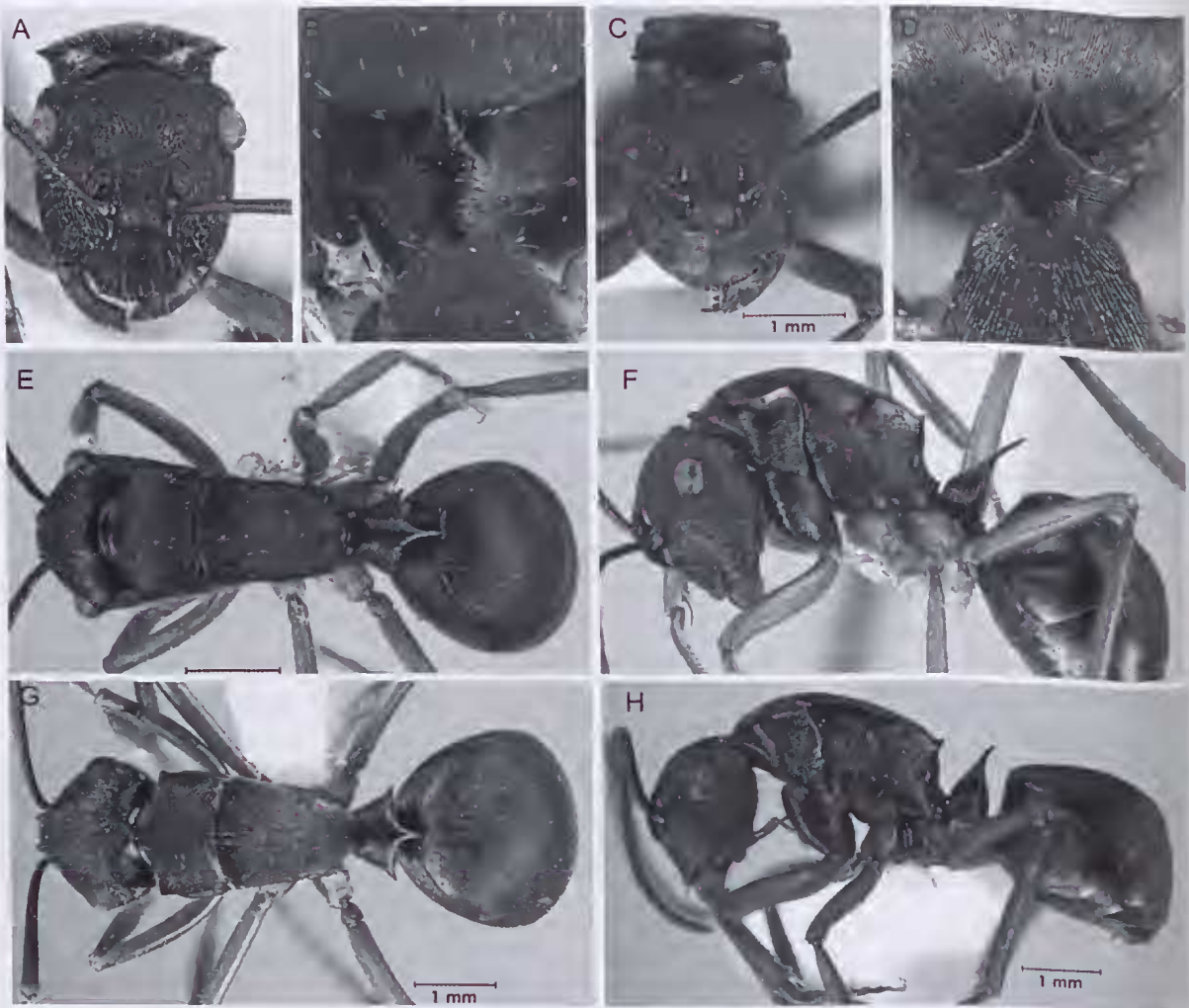


FIG. 5. *Polyrhachis gravis* species-group. Head in full-face view (A, C), petiole in frontal view (B, D), dorsal habitus (E, G), lateral habitus (F, H): *P. pseudothrinax* Hung (paratype) (A-B, E-F); *P. unicornis* sp. nov. (holotype) (C-D, G-H).

spines and two lateral teeth, usually reduced to mere angles (e.g. *P. incerta* or *P. shattucki*). Gaster in side view with anterior face straight, rather narrowly rounding onto dorsum of first gastral tergite.

Queen. Apart from sexual characters, including three ocelli, complete thoracic structure and wings, very similar to worker. Armament of pronotum, propodeum and petiole distinctly reduced with spines and teeth shorter and

stouter. Sculpturation, pilosity and colour virtually identical to worker. The only known queens are those of *P. micans* and *P. prometheus* and description of the latter is given below under that species heading.

Male. Males and immature stages mostly unknown and not dealt with in this paper.

Distribution and biology. The known distribution of the *P. micans*-group ranges from

central coastal QLD to the Gulf Country and westwards across the NT as far as the Kimberley region in northern WA. With a few exceptions, the species are relatively rare and only occasionally collected. They appear to be terrestrial nesters, building nests under the ground with entrances usually covered with a rock, piece of wood, or simply under a tuft of grass.

KEY TO WORKERS OF THE
P. MICANS SPECIES-GROUP

1. Petiole with four, almost subequal spines . . 2.
 - Petiole with two large dorsal spines; lateral spines greatly reduced or obsolete 3.
2. Petiole with dorsal margin strongly raised dorsomedially towards closely approximated dorsal spines (Fig. 6B, E); propodeal teeth rather massive, long and broad (Fig. 46); legs medium reddish-brown *P. eureka* sp. nov.
 - Petiole with dorsal margin less strongly raised; dorsal spines situated further apart (Fig. 7B); propodeal spines relatively short, more acute and slender (Fig. 7F); legs very dark reddish-brown or black *P. micans* Mayr
3. Body distinctly reddish-brown; lateral petiolar spines reduced to short acute teeth (NT, QLD) *P. incerta* Kohout
 - Body uniformly black; lateral petiolar spines reduced to blunt angles, or obsolete 4.
4. Propodeal dorsum very narrow, about 1.5 times longer than basal width, with parallel lateral margins; dorsal petiolar spines long and slender (WA, NT, QLD) *P. prometheus* Santschi
 - Propodeal dorsum distinctly wider than long, with strongly posteriorly converging lateral margins; dorsal petiolar spines relatively short (QLD) . . . *P. shattucki* sp. nov.

Polyrhachis eureka sp. nov.
(Figs 6A-B, E-F)

Etymology. Derived from a Greek word *heurēka*, meaning 'I have found it' (an exclamation of discovery).

Material. HOLOTYPE: QLD, Alehvale Stn., 9 km SE of Croydon, 18°15'S, 142°18'E, 16.x.1976, R.J. Kohout acc. 76.59 (worker). PARATYPES: data as for holotype (4 workers). Type deposition: Holotype (QMT 169998) and paratype in QM; 1 paratype each in ANIC, BMNH and MCZC.

Description. *Worker:* Dimensions (holotype cited first): TL c. 8.87, 8.87-9.58; HL 2.21, 2.14-2.25; HW 2.00, 1.87-2.03; CI 90, 87-90; SL 2.34, 2.31-2.37; SI 117, 117-123; PW 1.75, 1.63-1.78; MTL 2.74, 2.65-2.78 (1+4 measured).

Mandibles with 5 teeth. Anterior clypeal margin widely medially truncate, truncate portion more-or-less regularly denticulate, laterally delimited by distinct teeth. Clypeus with rather blunt median carina; virtually straight in profile, basal margin flat. Frontal triangle distinct. Frontal carinae sinuate with weakly raised margins; central area shallowly concave with flat frontal furrow. Sides of head in front of eyes rounding towards mandibular bases; behind eyes sides with a short, postocular lateral ridges and narrowly rounded occipital corners. Eyes distinctly convex, in full face view breaking lateral cephalic outline. Ocelli lacking. Pronotal dorsum distinctly wider than long; humeri bluntly angular with rather distinct anterior margins converging towards occipital collar; lateral pronotal margins converging towards moderately impressed, anteriorly bowed promesonotal suture. Mesonotal lateral margins converging posteriorly into flat metanotal groove. Propodeal margins raised, converging posteriorly and terminating in very distinct, somewhat dorsomedially flattened, broad-based, propodeal teeth with rounded tips; basal width of teeth about as wide as distance between their bases; propodeal dorsum curving in medially uninterrupted line into steep, shallowly concave declivity. Petiole with dorsal margin strongly rising medially and dorsally, terminating in a pair of closely approximate, slender, divergent spines; inner margins of spines continuous medially

into open 'U'-shaped dorsum of petiole (Fig. 6B); outer margins of spines descending into distinctly shorter, slender, lateral spines. Anterior face of first gastral segment virtually flat, lower than full height of petiole, narrowly rounding onto dorsum of gaster.

Mandibles closely and finely, longitudinally striate with piliferous pits. Clypeus reticulate-punctate. Head reticulate-punctate with sculpturation on vertex organised into more-or-less longitudinal striae. Pronotal dorsum very finely striate, median striae somewhat barrel-shaped. Dorsa of mesonotum and propodeum more distinctly, somewhat irregularly, longitudinally striate; sides of mesosoma wrinkled. Petiole, including spines, very finely reticulate. Gaster very closely and finely reticulate-punctate, semiopaque.

Mandibles towards masticatory borders with numerous curved, medium length, golden hairs. Anterior clypeal margin with several, anteriorly directed, longer golden setae medially and numerous shorter setae fringing margin laterally. A pair of medium length golden hairs near anterior clypeal margin and pair of shorter hairs near base; a few hairs on fore coxae and venter of middle and hind coxae and femora. Hairs absent from dorsum of head, mesosoma, petiole and dorsum of gaster. Venter and apex of gaster with relatively long, posteriorly inclined, golden hairs. Very short, appressed, golden pubescence in various densities over most body surfaces, except dorsum of mesosoma, most abundant on dorsum of gaster.

Mandibles medium reddish-brown at masticatory borders, becoming progressively darker towards bases; teeth dark, reddish-brown. Clypeus reddish-brown with rest of head black. Antennal scapes and basal funicular segments black or very dark reddish-brown, subsequent segments progressively lighter towards apices. Coxae and femora relatively light reddish-brown with tibiae a shade darker; tarsi very dark, almost black, with apical segments very light orange. Petiole reddish-brown, lateral borders and teeth almost black. Gaster, including venter and apex, distinctly reddish-brown.

Sexuals and immature stages unknown.

Remarks. *Polyrhachis eureka* is very similar to *P. micans* but differs in several characters including distinctly coarser and less regular sculpturation of the mesosomal dorsum. The eyes in *P. eureka* are more convex (Fig. 6A) and the propodeal teeth distinctly longer and wider (Fig. 6F), about as wide as the distance between their bases. In contrast, the eyes in *P. micans* are relatively flat (Fig. 7A) and the propodeal spines shorter, more acute and relatively slender (Fig. 7F), with their basal width about half of the distance between their bases. Dorsal margin of petiole strongly rising medially and dorsally, armed with a pair of closely approximate dorsal spines that are dorsoposteriorly directed and form, in lateral view, a single continuous line with anterior face of petiole (Fig. 6F). In contrast, the dorsal petiolar spines in *P. micans* are distinctly longer, more widely separated and distinctly more dorsally directed in lateral view (Fig. 7F).

The type series of *P. eureka*, from the Gulf Country of north-western QLD, are the only specimens known of this apparently rare species. The specimens were collected foraging on the ground in savannah woodland.

Polyrhachis incerta Kohout, 2008 (Figs 6C-D, G-H)

Polyrhachis incerta Kohout, 2008: 163, figs 1, 3-4. Holotype and paratype workers. Type locality: NT, Kakadu NP, Nourlangie Rock, 12°51'S, 132°49'E, 18.xi.1993, open sclerophyll forest, strays on ground and low vegetation (RJK acc. 93.50), QM (QMT 152088), ANIC, BMNH and MCZC (examined).

'*Polyrhachis (Campomyrma) micans* r. *ops* var. *rufa*' Crawley, 1921: 97. Original material: QLD, Townsville, 11-12.xii.1902 (F.P. Dodd) (workers), ANIC, BMNH, MCZC, OXUM, QM (examined) (unavailable name).

Material. NT: Kakadu NP, Ranger Uranium lease site, vii.1993 (ANA) (w); Groote Eylandt, i.1983 (G. Barrett) (w); ditto, G. Webb Pty Ltd site, 16-19. ix.1991 (G. Webb) (w).

Description. *Worker*: Dimensions (holotype cited first): TL c. 7.96, 7.56-8.32; HL 2.00, 1.87-2.03; HW 1.81, 1.68-1.84; CI 90, 87-92; SL 2.09, 2.00-2.15; SI 115, 115-123; PW 1.47, 1.34-1.50; MTL 2.43, 2.28-2.50 (9 measured).



FIG. 6. *Polyrhachis micans* species-group. Head in full-face view (A, C), petiole in frontal view (B, D), dorsal habitus (E, G), lateral habitus (F, H): *P. eureka* sp. nov. (holotype) (A-B, E-F); *P. incerta* Kohout (holotype) (C-D, G-H).

Sexuals and immature stages unknown.

Remarks. *Polyrhachis incerta* appears to be a very rare species currently known from two widely separated regions. The type series specimens were collected in Kakadu National Park in the NT, with additional specimens collected on Groote Eylandt. The only specimens recorded from QLD were collected on a single occasion by F.P. Dodd at Townsville in 1902.

***Polyrhachis micans* Mayr, 1876**
(Figs 7A-B, E-F)

Polyrhachis micans Mayr, 1876: 76. Syntype workers, queen. Original localities: QLD, Rockhampton, Peak Downs (A. Dietrich), NHMW (examined).

Polyrhachis (*Campomyrma*) *micans* Mayr; Santschi, 1920: 185. Combination in *P. (Campomyrma)*.

'*Polyrhachis* (*Campomyrma*) *micans* st. ops var. *dentinasis*' Santschi, 1920: 185. Original locality: QLD, Townsville, 11.ii.1902 (F.P. Dodd) (workers, queen), NHMB (examined) (unavailable name) (Taylor, 1986: 34).

'*Polyrhachis* (*Campomyrma*) *micans* st. ops var. *dentinasis*' Santschi; Kohout, 2008: 167. Material referred to *P. micans*.

Material. QLD: Mt Pollux, SW base, 22°28.7'S, 147°52.2'E, 13.i.2006, 380 m, eucalypt w'land (CJB #12601) (w, ♀); Lords Table, SE base, 22°40.7'S, 148°01.3'E, 440 m, 10.i.2006, eucalypt w'land (CJB #12566, 12567, 12568) (w, ♀); ditto, 4-6.iii.2006 (QM Party #13380, 13382) (w); Lords Table, SE base, 22°40.7'S, 148°01.3'E, 460m, 13.i-4.iii.2006, eucalypt w'land, intercept (CJB #13374) (w); ditto, malaise (CJB #13373) (w); ditto, dung/pitfall (CJB #13376) (w); Lords Table, W base, 22°39.6'S, 148°00.5'E, 500 m, eucalypt w'land (QM Party #13350, 13352) (w, ♀); Lords Table plateau, 22°39.4'S, 148°00.9'E, 640 m, 7.iii.2006, eucalypt w'land (CJB, S. Wright #13359) (♀); Scotts Peak, SE base, 22°34.6'S, 148°13.7'E, 420 m, 4&9.iii.2006, eucalypt woodland (CJB, S. Wright #13339) (w); ditto, 22°51.7'S, 148°13.5'E, 440 m, 3&9.iii.2006, lancewood (CJB, G.B. Monteith #13341) (w); 6.5 km NNW of Clermont, 22°46.2'S, 147°37.6'E, 260 m, 13.i-5.iii.2006, open forest, pitfall trap (CJB #12665) (w); Britton Ra., 6 km NNE of Homevale, 21°23'S, 148°33'E, 1-6.iv.1975 (RJK accs 75.155, 156/1); German Ck mine, nr Middlemount, 200 km NW of Rockhampton, 23°00'S, 148°30'E, 1997 (ANA) (w); nr Rockhampton, 6 km N of Mt Archer, 23°17'S, 150°34'E, 4.i.1979 (RJK acc. 79.16); Rundle Ra., 36 km NW of Gladstone, 23°39'S, 150°58'E, 24-30.iii.1975 (RJK acc. 75.136/2).

Description. *Worker.* Dimensions (syntypes cited first): TL c. 9.42-9.93, 8.67-10.63; HL 2.31-2.43, 2.21-2.40; HW 2.09-2.18, 1.95-2.09; CI 90, 87-89; SL 2.37-2.46, 2.31-2.50; SI 113, 115-120; PW 1.93-2.06, 1.84-2.03; MTL 2.90-2.96, 2.71-2.96 (2+6 measured).

Queen. Dimensions (syntype queen): TL c. 10.03; HL 2.37; HW 2.00; CI 84; SL 2.25; SI 112; PW 2.28; MTL 2.87 (1 measured).

Male and immature stages unknown.

Remarks. *Polyrhachis micans* is the oldest known species of the group, apparently first collected by Amelia Dietrich, a collector 'extraordinaire' for the former Museum Godeffroy in Hamburg. In spite of being a well known species occurring in an easily accessible part of the country, from about Mackay south to Gladstone, *P. micans* is poorly represented in most collections examined. It has apparently become a relatively rare species, perhaps due to the clearance of its natural habitat for vast areas of sugar cane plantations.

Polyrhachis micans is characterised by a petiole armed with four, almost uniformly distributed spines of subequal length. It is rather similar

to *P. eureka*, described above, sharing with that species the very finely, mostly longitudinally striate head and mesosoma, however, the sculpturation in *P. eureka* is distinctly coarser, notably on the mesosomal dorsum. Additional characters separating the species are given in the remarks section of *P. eureka*.

Polyrhachis prometheus Santschi, 1920
(Figs 7C-D, G-H)

Polyrhachis (Campomyrma) prometheus Santschi, 1920: 566.
Syntype workers. Type locality: QLD, Townsville, F.P. Dodd, NHMB (examined).

Material. WA: Kununurra, i.1986 (JDM) (w); Purnululu NP, 17°38'S, 128°26'E, spinifex uplands, 1.ix.2004 (L. Barrow) (w); Marandoo, Mt Bruce, xii.1991 (P.A. Warns) (w); Pilbara, Ethel Ck Stn, nr Newman, 1993 (P.A. Varris) (w). NT: Tiwi I., v-vi.2001 (J. Woinarski, PWCNT Fauna Survey) (w); Groote Eylandt, vi.1982 (JDM) (w); ditto, G. Webb Pty Ltd site, 16-19 ix 1991 (G. Webb) (w); ditto, 18 km S of Milikapiti, 19.xii.1994 (B. Hoffmann) (w); Darwin R., 2.xi.1997 (ANA) (w); Kalkaringi, 22-29.iv.1997 (A. Salvarani) (w); Kidman Springs, 8-14.v.1997 (B. Hoffmann) (w, q); ditto, 21.iv.1998 (Ben Hoffmann) (q); ditto, 13.vi.1996 (ANA) (w); Killarney Stn, VIC R. Distr., 2002 (A. Fisher) (w); Broadshaw Stn, Timber Ck area, ix.1999 (A.L. Hertog) (w); ditto, ?15°38'S, 130°25'E?, 2.vi.1999 (S. Eldridge) (w); Sherwin Ck, Roper R. region, v.1997 (A.L. Hertog) (w); Threeways Roadhouse, 22.x.1993, savannah w'land (B.B. Lowery) (w); Mainoru Stn, 250 km E of Katherine, iv.1996 (B. Hoffmann) (w, q). QLD: Floraville Stn, Leichard R. x-ing, 18°13'S, 139°53'E, 19-22.x.1976 (RJK acc. 76.65) (♀); Alehvale Stn, 10 km SE of Croydon, 18°15'S, 142°19'E, 3-5.x.1977 (RJK acc. 77.12) (w); Mt Isa, CRC MIM study, xii.1992 (T. Griffiths) (w); Lawn Hill Stn, 18°30'S, 138°10'E, iv.1991 (ANA, CRA Century Project) (w); Townsville, 15.xii.1902 (F.P. Dodd) (2 syntypes); Townsville Field Training Area/Tabletop, 19°27'S, 146°24'E, ii 1999 (A. Ash #76) (w); Cardigan Stn, nr Charters Towers, viii.1997 (B. Hoffmann) (w); 2.5 km of N Fanning Riv HS, 19°42.6'S, 146°25.9'E, 280 m, 10.ii.2007, open forest (CJB #14790) (w); Rochford Scrub, 20°07.0'S, 146°37.8'E, 270 m, 10.xii.2006, vinescrub (S. Wright #14684) (w);

Description. *Worker.* Dimensions (syntypes cited first): TL c. 7.46-8.82, 7.46-9.02; HL 1.79-2.09, 1.79-2.15; HW 1.62-1.93, 1.62-1.93; CI 90-92, 87-92; SL 1.84-2.03, 1.84-2.15; SI 105-113, 105-116; PW 1.43-1.68, 1.43-1.68; MTL 2.31-2.37, 2.31-2.74 (3+11 measured).

Queen. (not previously described) Dimensions: TL c. 9.52-9.98; HL 2.12-2.25; HW 1.81-1.93; CI 82-88; SL 1.96-2.06; SI 107-110; PW 2.00-2.15; MTL 2.65-2.74 (3 measured).

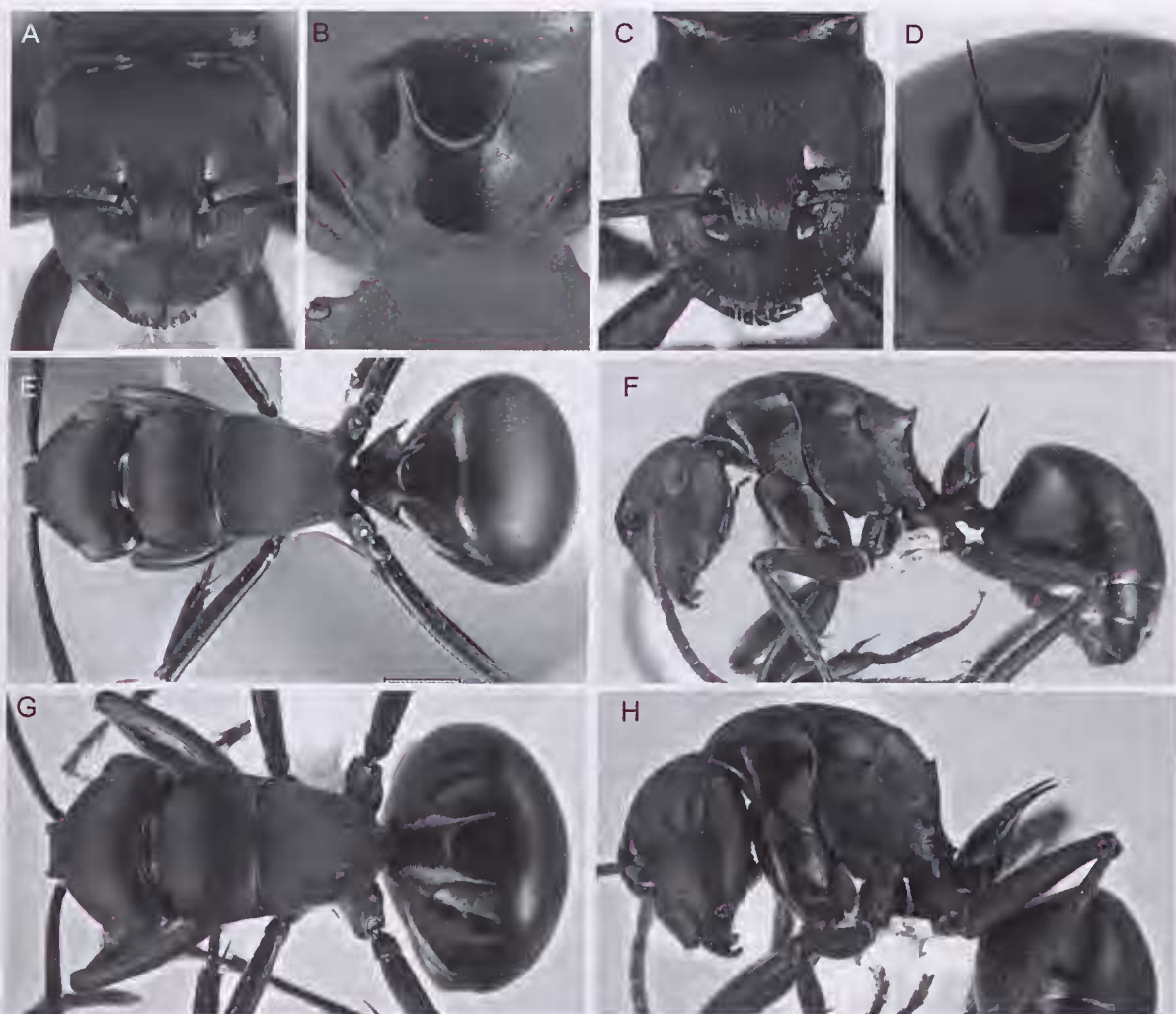


FIG. 7. *Polyrhachis micans* species-group. Head in full-face view (A, C), petiole in frontal view (B, D), dorsal habitus (E, G), lateral habitus (F, H): *P. micans* Mayr (A-B, E-F); *P. prometheus* Santschi (C-D, G-H).

Queen with usual characters identifying full sexuality, including three ocelli, complete thoracic structure and wings. Pronotal humeri bluntly angular; mesoscutum in dorsal view virtually as long as wide, anterior margin widely rounded; median line distinct; parapsides flat, only weakly raised posteriorly; mesoscutum in profile with relatively low anterior face and flat dorsum. Mesoscutellum weakly convex, marginally elevated above dorsal plane of mesosoma. Propodeal dorsum with lateral margins poorly defined, strongly converging posteriorly and terminating in short, upturned,

somewhat dorsolaterally directed teeth; propodeal dorsum between them rounding in uninterrupted line into steeply oblique declivity. Petiole rather similar to worker, spines distinctly shorter. Sculpturation similar to worker with head and mesoscutum finely, mostly longitudinally striate; propodeal dorsum finely reticulate-punctate; propodeal declivity and petiole very finely wrinkled, somewhat semipolished. Dorsum of gaster very finely reticulate-punctate. Pilosity similar to worker, mandibles towards masticatory borders with numerous, relatively long, curved golden

hairs; anterior clypeal margin medially with rather long, somewhat reddish-golden setae and numerous shorter setae fringing margin laterally. A pair of very short, bristle-like hairs on mesoscutum, venter of middle and hind coxae and femora; distinctly longer hairs on fore coxae and gastral venter and apex. Very short, silvery or pale golden, closely appressed pubescence sparingly distributed over most body surfaces. Colour identical to worker.

Male and immature stages unknown.

Remarks. With its narrow, parallel-sided propodeal dorsum and long petiolar spines, *P. prometheus* is easily recognised. It has the widest distribution of all the *P. micans*-group species, ranging from the Pilbara and Kimberley regions of WA and across the NT to QLD, where it has been recorded as far south as Gladstone.

Polyrhachis shattucki sp. nov.
(Figs 8A-D)

Etymology. Named in honour of Dr Steve O. Shattuck of the ANIC, CSIRO Division of Entomology, Canberra, in appreciation of his support and encouragement towards my work on *Polyrhachis* and for invaluable help in providing many of the excellent digital images that illustrate my continuing work on these highly interesting ants.

Material. HOLOTYPE: QLD: Undara Lava Lodge, 18°12'S, 144°34'E, savannah woodland, nocturnal strays on ground, R.J. Kohout acc. 03.43 (worker). PARATYPES: data as for holotype (68 workers). Type deposition: Holotype (QMT 169999) and most paratypes in QM; 6 paratype workers in ANIC; 2 paratype workers each in AMNH, BMNH, CASC, MCZC, MHNG, MNHU and NHMW.

Other Material. QLD: 4 km E of Charters Towers, 13.xiii.1976, dry sclerophyll (B.B. Lowery) (w, ♀).

Description. *Worker:* Dimensions (holotype cited first): TL c. 9.07, 7.66-9.07.87; HL 2.12, 1.93-2.18; HW 1.93, 1.72-2.06; CI 91, 89-94; SL 1.90, 1.75-1.90; SI 98, 92-103; PW 1.68, 1.59-1.81; MTL 2.34, 2.12-2.34 (1+15 measured).

Mandibles with 5 teeth. Anterior clypeal margin widely medially truncate, truncate portion more-or-less regularly denticulate. Clypeus with flat, rather indistinct median carina; virtually straight

in profile, only very weakly raised towards anterior margin; basal margin flat. Frontal triangle distinct. Frontal carinae sinuate with only very weakly and narrowly raised margins; central area wide with poorly indicated frontal furrow. Sides of head in front of eyes virtually straight, only weakly rounding towards mandibular bases; behind eyes sides forming short, narrowly rounded occipital corners. Eyes only moderately convex, in full face view breaking lateral cephalic outline. Ocelli lacking. Pronotal dorsum distinctly wider than long; humeri bluntly angular with rather distinct anterior margins converging towards occipital collar; lateral pronotal margins converging towards well impressed, anteriorly bowed promesonotal suture. Mesonotal lateral margins converging posteriorly into poorly indicated, shallowly impressed, metanotal groove. Propodeal margins weakly raised, converging posteriorly and terminating in short, upturned, somewhat dorso-anteriorly flattened, acute teeth; propodeal dorsum between them curving into steep, almost vertical declivity. Petiole scale-like, very slender in lateral view; dorsum armed with a pair of slender, medium length, subparallel spines; inner margins of spines continuous medially, forming 'U'-shaped dorsum of petiole; outer margins of spines steeply descending into rather blunt, lateral angles. Anterior face of first gastral segment virtually flat, lower than full height of petiole, narrowly rounding onto dorsum of gaster.

Mandibles closely and finely, longitudinally striate with piliferous pits. Clypeus reticulate-punctate. Head reticulate-punctate with sculpturation on vertex and along frontal carinae organised into longitudinal striae. Dorsum of mesosoma somewhat more finely, longitudinally, reticulate-striate with sides finely wrinkled. Petiole, including spines, very finely wrinkled. Gaster very closely and finely reticulate-punctate, semiopaque.

Mandibles towards masticatory borders with numerous curved, golden hairs. Anterior clypeal margin medially with several, anteriorly directed, uneven length golden setae and very short setae fringing margin laterally. A pair of medium length golden hairs near anterior

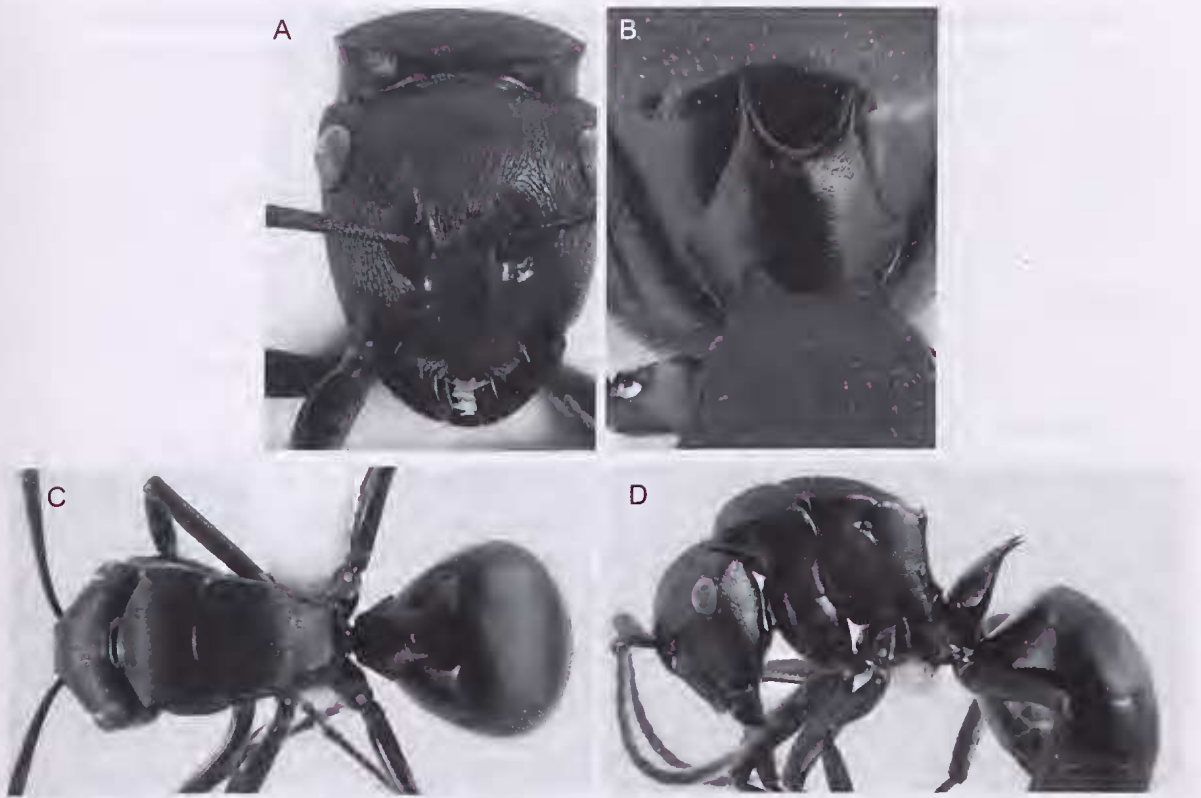


FIG. 8. *Polyrhachis micans* species-group. Head in full-face view (A), petiole in frontal view (B), dorsal habitus (C), lateral habitus (D): *P. shattucki* sp. nov. (holotype) (A-D).

clypeal margin laterally and a few hairs on fore coxae and venter of femora. Gaster with rather long, posteriorly inclined, golden hairs on venter and around apex, some as long as greatest diameter of eyes. Very short, appressed, silvery pubescence in various densities over most body surfaces, most abundant on dorsum of gaster.

Black; mandibles medium reddish-brown, light red band at masticatory borders, teeth black. Antennal scapes and basal funicular segments very dark reddish-brown; apical funicular segments progressively lighter towards apices. Middle and hind coxae, femora and fore tibiae medium reddish-brown; middle and hind tibiae a shade darker; tarsi very dark, almost black. Dorsum of gaster black; sides and venter reddish-brown, with margins of segments lined

with very dark reddish-brown or black; apex a shade lighter.

Queen. Dimensions: TL c. 9.22; HL 2.12; HW 1.87; CI 88; SL 1.84; SI 98; PW 2.06; MTL 2.25 (1 measured).

Queen very similar to worker and apart from characters identifying full sexuality, including three ocelli, complete thoracic structure and wings, differing as follows: clypeus with blunt, anteriorly distinct, median carina; eyes larger; pronotal humeri bluntly angular with anterior margins less distinct and shorter. Mesoscutum with anterior margin widely rounded in dorsal view, distinctly wider than long; median line very short; parapsides flat; mesoscutum in profile with relatively low anterior face, widely rounding onto flat dorsum. Mesoscutellum not elevated above dorsal plane of mesosoma, weakly

convex, posteriorly rounded into well impressed metanotal groove; propodeum wider than long with lateral margins strongly converging posteriorly, terminating in upturned teeth. Petiole with dorsal spines distinctly shorter. Sculpturation, pilosity and colour scheme virtually identical to worker.

Male and immature stages unknown.

Remarks. *Polyrhachis shattucki* is apparently a rare and has been collected only twice. It has been listed earlier (Kohout, 2008: 165) in a key to species of the *P. micans*-group as '*P. 'Campo 12'* (undescribed)'.

ACKNOWLEDGEMENTS

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